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Cancer of the Lung

What Should Be the Present Approach?

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THERE SEEMS to be very little doubt that cancer of the lung has increased in frequency, not only in this country but in the European countries in which this problem has been studied in recent years. There are some observers who feel that this increase is simply a matter of increased recognition of the disease. Others believe it is due primarily to the increased life expectancy of the population. Still others are of the opinion that the greater consumption of tobacco, especially cigarettes, by the American public has played an important part in the increased incidence of cancer of the lung in this country. Whatever the cause may be, there can be no doubt that cancer of the lung is a very frequent tumor in men and is one of the major cancer problems at present.

The general public has every reason to ask, "What has the medical profession to offer the patient with cancer of the lung?"; and the medical profession has every reason to ask, "What should our present approach be to cancer of the lung?"

As far as we are aware at present, surgical operation offers the only hope of cure of cancer of the lung. When the involved lung is removed before there is demonstrable spread of the tumor to the lymph nodes or to the adjacent structures, the

• The best opportunities at present for improving the results in the treatment of patients with cancer of the lung are by way of (a) utilizing the information obtained on routine x-ray examination of the chest, (b) decreasing the delay between the time of the first symptoms and the time the patient consults a physician, and (c) decreasing the delay between the time the patient first consults a physician and the time the cancer is surgically removed.

The medical profession must increase its index of suspicion of cancer of the lung and persist in efforts to make a diagnosis when lung cancer is suspected.

Exploratory thoracotomy should be used in suspicious cases when the diagnosis cannot be established by other methods.

chances of a five-year survival approximate 50 per cent. Unfortunately, in less than half the patients subjected to pneumonectomy are the lymph nodes free of demonstrable metastasis, so that the five-year survival for all patients in whom pneumonectomy is accomplished approximates 20 to 25 per cent. Again unfortunately, in a third or more of the patients operated upon the lung cannot be resected and, moreover, approximately 30 per cent of the patients with lung cancer are shown to be inoperable even without exploration. This leaves a discouragingly low salvage rate of from 5 to 10 per cent for five-year survival of patients with cancer

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of the lung who enter any large medical center at present.

Since a surgeon is discouraged by these figures, it is natural that he should try to improve the salvage rate by becoming more and more radical in the type of operation employed. A radical pneumonectomy may now involve the removal of large segments of the chest wall, the diaphragm, or major parts of the mediastinal structures, including parts of the auricles or great vessels. Many surgeons feel, however, that major inroads into the ravages of this disease are not likely to be made by further increasing the extent of the resection. Data are not yet available to show that this radical approach to the surgical treatment of cancer of the lung will increase the number of surviving patients at the five-year period.

Inasmuch as the salvage rate may be as high as 50 per cent when the tumor has not obviously spread beyond the lung, it seems quite obvious that if all patients could be operated upon at that stage, the salvage rate would be increased five to tenfold. It may well be, therefore, that until some major advance in the therapy of cancer is discovered, the chief hope for increasing the salvage rate for cancer of the lung is in earlier diagnosis. There appear to be three methods by which patients might be brought to operation sooner. First, a wider use of routine x-ray films of the chest. Second, education of the public to seek medical advice earlier. Third, the training of all physicians to recognize the disease and bring the patient to operation earlier. These points will be discussed briefly.

1. There can be little doubt that if the entire population, or even men over 40 years of age, had x-ray examination of the chest every six months, many asymptomatic lung cancers would be detected. However, there are data available which suggest that there would be less than one asymptomatic cancer of the lung found per thousand chest x-rays. It is difficult to know, therefore, whether a wide-scale program of routine x-ray examination of the chest should be carried out solely for the purpose of picking up cancer of the lung. There can be no doubt, however, that routine use of x-ray examination of the chest has increased greatly throughout the country in recent years. It is obviously the duty of the medical profession to take advantage of the information obtained by these x-ray films. When a lesion is picked up on such a routine examination, that information should be pursued to its logical conclusion; physicians should not sit by with the advice to the patient of, "Don't bother it until it bothers you."

2. In a recent Philadelphia series of patients with cancer of the lung, it was determined that there had been a three-month delay between the time of

the first symptoms and the time the patient consulted a physician. The American Cancer Society has played a prominent part in trying to reduce this period of "patient delay." There are persons who have doubted the wisdom of spreading knowledge concerning the symptoms of cancer because of the fear of causing cancerphobia in a large segment of the population. It is difficult to believe, however, that the dissemination of such knowledge would be detrimental to the common good.

3. In the same series that showed that the patient delay in cancer of the lung was three months, it was found that the "physician delay" was five months. In other words, there was a delay of five months between the time the patient first consulted a physician and the time he came to operation. Certainly it behooves the medical profession to reduce this delay on the part of the physician once the patient has presented himself. The lay press is filled with articles which indicate to the general public that cancer is curable if the patient will only consult a physician soon enough. To that information should be added the necessity of the physician's recognizing the disease once he is presented with it and proceeding with the proper treatment.

There can be no doubt that even if every patient presented himself to a physician as soon as it reasonably could be expected on the basis of symptoms, and if the physician always recognized the disease and had the patient operated upon immediately, a 50 per cent five-year survival could not be approximated. Not only would the surgeon frequently find microscopic metastasis in the lymph nodes, but often the lesion would be grossly nonresectable, even with ideal performance on the part of the patient and medical profession.

A case in point is that of a 56-year-old man who consulted a physician because of a mild irritating cough of only three weeks' duration. It can be assumed that there are few physicians who would seek medical advice because of a mild cough of such short duration. It is also probable that if physical examination showed no abnormalities the vast majority of physicians in this country would have given this patient some cough medicine and sent him on his way or suggested that he come back if the cough did not improve. However, the physician in this particular case happened to have an x-ray film of the chest made. A suspicious lesion was noted on the right side. A bronchoscopic examination was negative but a Papanicolaou smear was positive for carcinoma. The patient was operated upon within a month of the very first symptom. It was thought that this would be an early lesion, but it was found that there was widespread metastasis over the visceral and parietal pleura. Operation was hopeless.

The author has seen at least one patient in whom a lesion discovered on a routine chest survey was found to be inoperable before the patient had a single symptom. Such experiences are discouraging. Indeed, a few physicians after such experiences are likely to adopt an attitude of hopelessness. They forget that such is the exception and not the rule. Fortunately, all cancer of the lung does not behave in such a manner. Certainly lung cancer may manifest itself in many ways and, whereas some grow and spread rapidly, others grow and spread slowly.

An example of a slow growth of lung cancer may be illustrated by the case of a 38-year-old man who was discharged from the army because of hemoptysis. He had had three bouts of hemoptysis over a three-year period and had been studied extensively in the army. He was finally discharged from the army with a tentative diagnosis of tuberculosis although no organisms were ever found. A year later a shadow appeared in the right lower lobe. The physician who was caring for him, thinking that tuberculosis had finally showed its hand, put him to bed. After a year of bed rest it was evident that the lesion was growing but the sputum never was positive for tubercle bacilli. For that reason the patient was operated upon and a bronchogenic carcinoma was found. Although this lesion was known to be present for over a year and had probably been present for five years, it was still apparently a small one and confined to the lung. At last report the patient had gone for an additional nine years since pneumonectomy with no evidence of recurrence.

The two cases just cited certainly point up the fact that there is a tremendous variation in the course which cancer of the lung may take. It means that the index of suspicion of the medical profession must be brought to its very highest peak. One of the greatest errors a physician may make after he suspects lung cancer is to give up too soon in his efforts to establish the diagnosis. In dealing with this problem he should remember that persistence is a virtue. If he suspects cancer of the lung, certainly he should not be satisfied with a single x-ray film of the chest. A case in point will show how easy it is to make this error.

A 50-year-old man went to a physician because of a cough and a little blood-streaked sputum. Quite rightly the physician suspected cancer and an x-ray film of the chest was ordered. It was reported as negative. The physician made the mistake of accepting this report as sufficient evidence that the patient did not have cancer. He did not remember that cancer of the bronchus is not likely to be visualized on a plain film of the chest until it gets large enough to obstruct the bronchus enough to cause atelectasis behind it. In order to pick up such an early lesion in the bronchus, bronchoscopic examination is nec-

essary. Had this been done in this case a specimen of the tumor could have been excised for biopsy at once. Unfortunately, the physician took the report on the x-ray film as the last word. Also unfortunately, the tumor did not bleed again and the patient became content with his "cigarette cough." When he finally had another bout of hemoptysis eight months later the tumor was found to be still resectable but there was metastatic growth in the mediastinal lymph nodes. Had the physician followed up his suspicion with enough persistence to use the diagnostic methods available, the patient would have been operated upon eight months earlier and might well have been cured.

Another case may be cited which presents the importance of persistence in trying to make the correct diagnosis. A 56-year-old man had noticed some increase in his usual "cigarette cough." An x-ray film showed nothing but slightly increased markings at the base of the right lung. Upon bronchoscopic examination some granulation tissue in the bronchus was noted but a biopsy of a specimen showed only inflammatory tissue. A bronchogram showed slight bronchiectasis. Question arose as to why bronchiectasis should develop in a man in his fifties, or whether he had had this for years and it had only become somewhat more symptomatic recently. A second biopsy was also negative for cancer, but a third biopsy did show cancer of the lung. Here persistence was indeed a virtue, for when the lung was removed there was no evidence of spread of the lesion beyond the local site and at last report, ten years after pneumonectomy, the patient was still living. Had the physicians involved given up after one bronchoscopic biopsy there might well have been six to twelve months' delay before the patient was operated upon.

In trying to get a patient with cancer of the lung to operation at an earlier time in the course of the disease, it is perfectly obvious that the physician should attack first of all the problem of the physician delay. Certainly he should use every diagnostic method at his disposal, including exploratory thoracotomy.

METHODS OF DIAGNOSIS

X-ray. A careful roentgen study of the chest will reveal carcinoma of the lung in most of the patients with this disease at a stage in which it is possible to recognize the disease by any of the available techniques. One situation where the x-ray may be entirely negative is that of a small tumor in a bronchus, not causing obstruction. In this situation a bronchoscopic examination fortunately will usually lead to the diagnosis but it does mean that one must not be content with an x-ray alone when there is a persistent cough, especially with blood-

streaked sputum. It should be pointed out also that a simple plain x-ray film of the chest does not constitute a careful roentgen study of the patient. By using various of the newer techniques such as body section films, a lesion can frequently be picked up which could not be definitely identified otherwise.

A vast majority of the errors are made, however, in not getting an x-ray in the first place or in misinterpreting the film once it has been obtained, rather than in the imperfections in present technique. It is well known, however, that small lesions in the lung fields are frequently missed and it is not at all unlikely that with improvements in x-ray technique considerable improvement may be made in this regard. The greatest mistake, however, is not made in a lesion which cannot be seen by x-ray but in misinterpreting an x-ray film to indicate some type of inflammatory disease in the lung rather than a malignant lesion.

The classic example is the patient with a cough who finally begins to have fever. Then an x-ray film shows infiltration in one lobe and it is attributed to "virus pneumonia" and the patient is given antibiotics. The fever subsides and no further x-ray films may be made until repeated infection occurs some months later. This, of course, is due to carcinoma of the lung in its early stages. Bronchial obstruction results in retained secretions. When the infection occurs behind the obstruction a diagnosis of inflammatory disease is entertained. The fact that this infection may be controlled by antibiotics is perhaps unfortunate, as it is likely to delay by weeks or months the true diagnosis, for not only may the infection subside but the x-ray shadow produced by the infection may decrease, if not entirely disappear.

It is an unhappy fact that about 40 per cent of the patients operated upon for cancer of the lung have previously had a diagnosis of inflammatory process in the lung and have been treated for that condition, thereby delaying the diagnosis and treatment of the cancer. In the early days the diagnosis in such cases was "bronchopneumonia." Later it was "atypical pneumonia," and still later "atypical atypical pneumonia." More recently the diagnosis has been "virus pneumonia." The pathologic changes remain the same—namely, partial or complete bronchial obstruction by the cancer with infection behind it. Fortunately, well-trained radiologists more and more are recognizing such lesions as being due to cancer.

It should be emphasized that there is a tremendous difference between a single x-ray film of the chest and a careful examination made by a competent radiologist. Early lesions may often be identified by thorough study although missed on a single film. Careful fluoroscopic examination with inspiration and expiration films may occasionally pick up

an early lesion causing abnormalities in ventilation. The various techniques of body section films have also proved to be of great benefit in the early diagnosis of cancer of the lung.

Bronchoscopy. Bronchoscopy is the next most important diagnostic method when dealing with lung cancer. The cancer may be located where it can be visualized bronchoscopically and a tissue diagnosis made by actual biopsy in about 25 per cent of the patients with bronchogenic carcinoma. In addition, the bronchial secretions may be studied and a positive diagnosis made by the Papanicolaou technique in another 25 to 50 per cent, depending upon the experience of the bronchologist and pathologist. There are always some instances, however, in which a positive diagnosis cannot be arrived at by these techniques. It is fortunate, however, that the lesion which is least likely to be seen bronchoscopically is the one that is most likely to be seen on the plain film of the chest, so that further diagnostic efforts will be mandatory.

Aspiration Biopsy. It has been the author's belief that biopsy of material aspirated through a needle inserted into the lung has its chief usefulness in patients who are considered to be inoperable but in whom it is desirable to have a positive tissue diagnosis. When it is thought that the lesion is operable, there would seem to be little point in aspiration biopsy. If carcinoma cells were obtained, operation would be the next step. On the other hand, if carcinoma cells were not obtained upon aspiration, the operation could not be avoided, for fear that carcinoma was present and had simply been missed by the aspirating needle. It has been felt, therefore, that since the results of the aspiration will not influence whether or not the patient is to be explored, it is not worth the risk of transplanting tumor cells to the chest wall.

Exploratory Thoracotomy. Thoracic surgery has now reached a point where exploratory thoracotomy may be considered to be just about as safe as exploratory laparotomy. For many years exploratory laparotomy has been done to determine the nature of doubtful masses in the abdomen. It is evident, therefore, that the time has come when, if dealing with a mass in the thorax the nature of which is not certain, an exploratory thoracotomy should be done. The tumors in the large bronchi are usually accessible for a positive diagnosis by bronchoscopic examination. The peripherally located tumors are the most amenable to diagnosis by exploratory thoracotomy. It is felt, therefore, that when there is any real question of the diagnosis of a lesion in the chest demonstrated by x-ray, the patient should have the benefit of exploratory thoracotomy. This, of course, does not mean that every effort should

not be made preoperatively to make the diagnosis and possibly avoid exploratory thoracotomy in those instances in which the thoracotomy is not required for therapy. This is particularly true, of course, in the various types of lymphomas, as well as in inflammatory disease, especially tuberculosis.

At present there are approximately eight million x-ray films of the chest made in this country each year, either as a matter of routine or because of symptoms. A great many asymptomatic lesions are being discovered. The author strongly believes that when a mass lesion is discovered and a positive

diagnosis cannot be arrived at otherwise, exploratory thoracotomy should be performed. Many early lesions are being removed in this manner.

If the medical profession is to reduce the delay in getting patients with carcinoma of the lung to operation once the patient has presented himself, physicians must, first, increase their index of suspicion of cancer and, second, persist in efforts toward the diagnosis of such lesions. Exploratory thoracotomy should be undertaken for suspicious lesions if the diagnosis cannot be made otherwise.

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Management of Nephrosis

The Use of Long Continued Hormone Therapy

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IT IS BECOMING increasingly apparent in both adults and children that nephrosis occurs as a distinct clinical entity. It is characterized by the insidious onset of edema with or without a history of previous illness, proteinuria, hypoproteinemia and hyperlipemia. Transient azotemia, hematuria and hypertension may occur.

The usual natural course of nephrosis is marked by exacerbation and remission of the signs and symptoms for an average duration of two years. Rarely a patient recovers after a single episode of anasarca. Unfortunately, a slightly greater number show nephritic signs (hematuria, hypertension, azotemia) early in the disease which are persistent and progress unrelentingly to renal failure. Whether therapy of any kind offers relief to such patients is extremely doubtful. However, it is equally questionable that the outcome for the majority of patients between these extremes is settled at the outset and not influenced by the chronic nature of the disease. For these patients, management is directed at control of the edema and other apparent abnormalities such as proteinuria with the hope that the basic lesion may be corrected and the development of permanent renal damage prevented.

Prior to chemotherapy, approximately 50 per cent of patients with nephrosis died of infectious processes, particularly peritonitis. Observation of nephrotic patients in whom adequate chemotherapy controlled intercurrent infections indicated that approximately 50 per cent of these patients survived longer only to die in renal failure.^{21,7} Regardless of the duration of the nephrotic symptoms, it is impossible to predict the outcome until signs and symptoms of progressive renal failure develop. Some observers have found early persistent hypertension indicative of a poor prognosis.¹⁰ On the other hand, other investigators noted that hypertension present for more than a year could be relieved by adequate therapy² or might disappear spontaneously.⁷

Management of nephrosis has been directed at the

• The course of nephrosis in 36 children was evaluated. Twelve of 24 who received no treatment or short-term courses of steroids died. Eleven of the 24 had been well for six months to five years at the time of this report.

Twelve patients received steroids by schedule over extended periods. One died and eleven had been free of signs and symptoms of nephrosis for four to eighteen months at the time of report. In only two cases was therapy discontinued. It seems evident that these patients are experiencing a better state of well-being. Whether or not the prognosis is being altered for any single patient cannot be determined.

elimination of the edema because spontaneous recovery is preceded by diuresis and because in this way the patient can be made more comfortable. A variety of means has been used—administration of agents to increase oncotic pressure, diet or ion exchange resins for control of sodium intake, diuretics or excessive water intake to increase salt and water excretion, mechanical removal of edema fluid, pyretic agents and a number of hormones, desiccated thyroid and particularly adrenal steroids. A few of these are listed in Table 1. Two hyperoncotic agents, salt-poor albumin¹⁵ and dextran^{5,20} cause diuresis of water and salt promptly after pronounced increase in plasma volume. Febrile episodes following such infections as measles⁶ and malaria² are also followed by diuresis and remission in a significant number of cases. A recent report of Gilbertsen and Bashour² is especially interesting: Four of five patients with signs of chronic renal failure had complete remissions with relief of azotemia and hypertension for 11 to 20 months after therapy with malaria. It is evident from this incomplete presentation of published data that the over-all experience with adrenal hormones has been most uniform. In general, short-term courses of cortisone, hydrocortisone or corticotropin given by intramuscular or intravenous routes cause diuresis in approximately 80 per cent of patients.^{4,18,22,23,25}

The almost invariable relapse after initial treatment led to the administration of repeated courses of adrenal hormones, as many as ten courses being given to a patient.⁴ There is no predictability as to which course in a series in a given patient will

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TABLE 1.—Results of Therapy with Various Agents

Agent	Patients		Investigators
	Number	Per Cent with Diuresis	
Salt-poor albumin..	13	54	Luetscher, et al.
Dextran	16	37	James, et al.
	12	60	Olive, et al.
Measles	12	75	Janeway, et al.
Malaria	5	80	Gilbertsen, et al.
Steroids for edema	88	74	Rance, et al.
	64	81	Heymann, et al.
	47	81	Metcoff, et al.
	34	82	Rapoport, et al.

produce favorable results. Observations made during the course of diuresis brought about by adrenal hormones soon indicated that profound physiological alterations were occurring in addition to loss of excess salt and water. In Table 2 are listed some of the significant changes. Renal function improves^{1,11} and the abnormal serum electrolytes, protein²⁷ and lipids revert toward normal. There is a decrease in the elevated, circulating antidiuretic hormone¹² and in the urinary excretion of the salt-retaining hormone, aldosterone.¹⁴ The rise in serum complement merits an additional word. Lange¹⁰ interpreted the rise of serum complement as indicative of cessation of the disease process. He considered nephrosis a disease of "complement-binding" antigen-antibody reaction and expressed belief that cortisone and corticotropin act by the depression of certain antibodies. In experimental work on rats with the nephrotic syndrome this theory was demonstrated very nicely.³ Unfortunately, the cause of the human disease remains obscure.

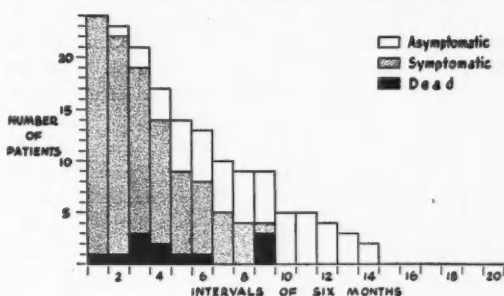
Cognizant that adrenal hormones were doing more than producing diuresis, Kramer and co-workers⁸ began to treat nonedematous patients. A second course of corticotropin was given a week or two after hormone-induced diuresis. Continued improvement with frequent return to normal of proteins and lipids and pronounced extension of the period of remission were observed.

Long-term courses of hormone therapy followed. Lange and co-workers⁹ induced diuresis with corticotropin, 100 units to 200 units per day given for ten days. If diuresis did not occur, treatment was repeated with a larger dosage. After diuresis occurred, cortisone was given by mouth, 100 mg. every eight hours for three consecutive days each week. If the patient weighed more than 40 pounds, 400 mg. per day was given. The intermittent therapy was continued for one year. Discontinuing the hormone was done by increasing the interval between the courses rather than by diminution of the dosage. Of 29 patients, 28 were edema-free after three to 40 months of therapy, 14 of 23 patients did not have proteinuria.¹⁰

TABLE 2.—Physiologic Changes Following Steroid-Induced Diuresis

1. Improvement in renal function.
 - (a) Increase in glomerular filtration rate.
 - (b) Decrease in clearance of albumin.
2. Metabolic alterations.
 - (a) Decrease in urinary excretion of aldosterone.
 - (b) Increase in serum proteins with improvement in electrophoretic pattern.
 - (c) Decrease in circulating antidiuretic hormone.
3. Influence on basic lesion.
 - (a) Return of serum complement to normal levels.

STERIODS FOR EDEMA OR NO THERAPY



STERIODS BY SCHEDULE

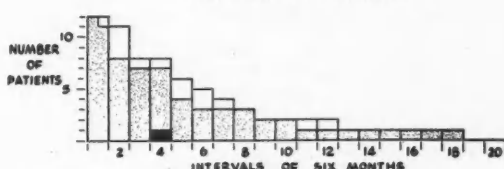


Chart 1.—Summary of course of nephrosis in 36 children, plotted in six-month intervals of disease.

Merrill¹⁷ recommended daily administration of corticotropin-gel, 1 unit per pound of body weight until edema and proteinuria were eliminated. The same dose was continued for two additional weeks then halved by giving it every other day for two weeks. Gradual reduction of the dosage followed for the next 12 weeks. If the patient remained free of proteinuria, the injections were given only twice weekly for an additional four weeks. Of 26 patients, 24 were free of edema and proteinuria. Nine of them had had no treatment in 18 months. This type of management is recommended only for children, as the large doses are not well tolerated by adults.

It is apparent that success of treatment can only be established after many years of following great numbers of patients. However, Riley²⁶ attempted to evaluate, in a statistically acceptable method, various types of therapy in fluctuating clinic populations on a yearly basis. The course of nephrosis in 533 pa-

tients, as determined by records collected from many hospitals, was analyzed. No difference in mortality rate was observed as between patients receiving no therapy and those receiving steroids for edema only. However, a pronounced decrease in mortality was noted in patients treated with steroids by schedule. Obviously, as Riley emphasized, the data are not suitable for statistical analysis. However, the evidence seemed to suggest that giving steroids by schedule prolongs life in childhood nephrosis.

The author's limited experience in this regard is presented in Chart 1. Of 24 children who received no therapy or steroids for edema only, 12 are dead and one was lost to follow-up after two years of active disease. The remaining 11, after having disease for six months to four and a half years, had been well for six months to five years of observation at the time of this report. Patients who continued to have active disease are among the 12 children who have been treated with scheduled steroids. One was seen after two years of disease, received continuous therapy for two months with no response, and died in renal failure. Four patients received continuous steroid therapy at the beginning of the disease, became symptomless promptly and are still receiving therapy. Two completed courses of scheduled steroids and have been free of symptoms for approximately one year. The remaining four, ill for three to nine years, have been receiving steroids for the last 15 to 16 months. Two are free of symptoms; the other two have continuing proteinuria and one is also hypertensive.

The usual course of therapy followed for these patients, which is somewhat similar to that of Merrill, is illustrated in Chart 2. The patient, the case shown in Chart 2, a two-year-old boy, was hospitalized with a history of edema and proteinuria of nine days' duration. After a diagnosis of nephrosis was established, corticotropin-gel was given, 1 unit per pound of body weight daily for three weeks. Diuresis had begun and proteinuria had already abated at the time therapy was started. At the end of three weeks the patient was discharged from the hospital, still receiving corticotropin-gel in dosage of 1 unit per pound of body weight every other day, prophylactic doses of tetracycline, extra potassium, and with moderate salt restriction. The mother gave the injections of steroid at home and tested daily samples of urine for protein with 20 per cent sulfosalicylic acid. The patient was seen by a physician weekly until December 1955 and monthly thereafter. In these 12 months he had two episodes of proteinuria associated with infection. Both times the corticotropin was increased and was given daily, in addition to adequate chemotherapy.

Data on the more complicated case are shown in Chart 3. The patient, a two-year-old boy, had symp-

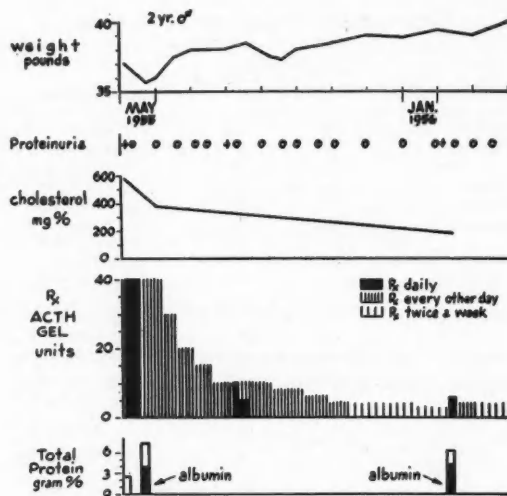


Chart 2.—Data on steroid therapy in a 2-year-old boy with nephrosis of recent onset.

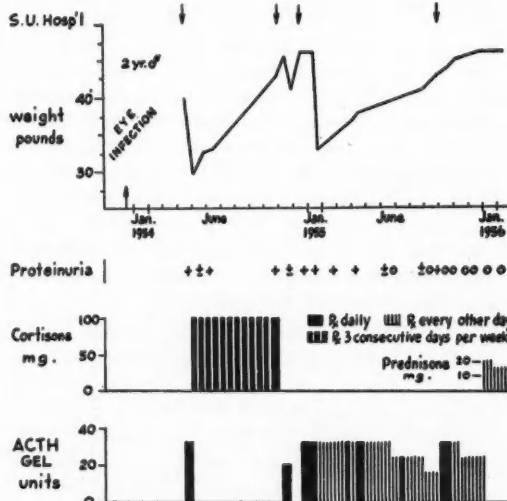


Chart 3.—Data on steroid therapy in a 2-year-old boy with nephrosis of four months' duration.

toms of nephrosis for four months before he received steroid therapy. First he received cortisone, 100 mg. daily for three weeks. Diuresis occurred and proteinuria abated, and the patient then was given a maintenance dosage of cortisone, 100 mg. daily for three consecutive days of each week. However, as Lange emphasized,⁹ this dose is inadequate. Three months later, while still receiving the prescribed therapy, he had a relapse and was given cortisone daily by a private physician. Due to parental anxiety, he was returned to Stanford Hospital where cortisone was given daily for a total of 14 days. After five days without treatment, as there was no response, corti-

cortropin-gel was given, 25 units daily for 14 days. After this there was increased urination but not complete diuresis, possibly because of an intercurrent infection. The patient went home for a while, then returned in four weeks and again was given corticotropin-gel, 1 unit per pound per day. Abrupt diuresis occurred on the 23rd day of therapy. During this period of rapid loss of weight, the patient had generalized convulsions for 48 hours. Blood pressure and the potassium, bicarbonate, calcium, phosphate and urea contents of the serum were normal. As in similar cases reported in the literature,⁴ no cause was immediately evident. For the next eight months, therapy was determined by an effort to control proteinuria. The patient was discharged from the hospital on corticotropin-gel, 40 units every other day. He received this in the pediatric clinic where he was observed by one physician. After a two-to-four-week interval of no proteinuria, the dosage was lowered or the interval increased to twice a week. Repeated infections accompanied by return of proteinuria made reducing the amount of steroid a slow process. After nine months of therapy, in September 1955, a relapse occurred with edema in addition to proteinuria. The patient was hospitalized and given corticotropin-gel, 40 units daily. Immediately the slight edema disappeared and the urine became protein-free. A change to prednisone by mouth then was made, and at last report the patient had remained free of symptoms for four months.

Questions as to amount and duration of steroid therapy cannot be answered. Rapoport and McCrory²⁴ divided 42 patients with nephrosis into two groups, one group made up of those who became free of proteinuria in four to eight weeks of intensive cortisone therapy; the other of those who did not. All patients in the group who continued to have proteinuria for two years became chronic nephritics, and the ultimate fatal outcome was not influenced by steroid therapy. On the basis of their observations, these investigators considered the determination of clearance of protein a very useful prognostic tool.¹⁶ They seriously questioned the advisability and need of prolonged steroid therapy in patients who rapidly became free of proteinuria.

Nevertheless, from observations of the small group of patients reported upon herein and the many reported upon in the literature it seems evident that with intensive steroid therapy nephrotic children are maintained in better health, that the edema which makes them so susceptible to infections is controlled and that perhaps mortality is lowered.

A discussion of intensive steroid therapy is not complete without emphasis on the dangers of such treatment. Categories of disturbances which require watching are listed in Table 3. During intensive steroid therapy, the glomerular filtration rate may

TABLE 3.—Complications of Steroid Therapy

1. Renal Failure.
2. Derangement of serum electrolytes.
3. Infection.
4. Thrombosis.

be lowered, and edema, serum potassium and urea may increase. For these reasons, it is exceedingly ill-advised to give potassium by mouth at this stage unless a need has been demonstrated. Blood pressure may increase with accompanying encephalopathy. Hyponatremia, hypokalemia or excessive dehydration may occur during diuresis.¹³ In a patient receiving steroid therapy, signs of infections may be masked and the infection spread rapidly. Thrombotic phenomena that may occur in nephrosis may be precipitated by hormone therapy. It seems evident that treatment with steroids must be individualized for each nephrotic patient and the patient diligently watched.

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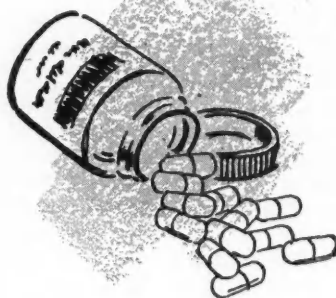
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Endometriosis

A Review

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THAT THERE IS GREAT INTEREST in endometriosis is well borne out by the accumulated literature on the subject since Sampson's⁵¹ paper on perforating hemorrhagic cysts of the ovary appeared in 1921. A condition which seemed rare as a gynecological entity in the twenties is today one of the most common causes of pelvic invalidism in this country, either as a single pathological condition or in association with other pelvic diseases such as fibroids, chronic inflammatory disease, ovarian neoplasms and adenomyosis. It may occur rarely in a teen-aged girl but is most prevalent in the third and fourth decades of life. The process is one occurring during the menstrual life of woman but has been found after the menopause in association with other pelvic disease such as granulosa cell tumors, fundal adenocarcinomas and myomas.

The diagnosis of endometriosis is on the increase. This is shown by the statistical reports of numerous investigators on proven microscopic studies of the pelvic tissues removed at laparotomy. Still, many cases with gross characteristic changes are diagnosed at the operating table but the diagnosis is not substantiated by the pathologist at later study. Many times the specimen looks different after standing, and the smaller lesions cannot be recognized in the laboratory unless definitely marked at the time of removal.

The medical profession is also more alert to the pelvic symptoms and changes associated with endometriosis. This has led to a more critical survey of the history of this condition and to closer observation and examination of patients both pelvically and rectally. Nevertheless, if there is also some other pelvic pathologic condition to confuse the issue, the presence of endometriosis may remain obscured until direct observation is made at the operating table.

The incidence in various classifications of patients has been reported by a number of observers, and it is obvious from these studies that endometriosis is a disease of white women in the higher economic brackets. This fact led Meigs⁵² to postulate that the reason endometriosis is more common in patients observed in private practices is that young women in

• Endometriosis, the cause of which is unknown, is on the increase. Treatment is surgical—conservative in the childbearing years. Hormonal therapy is sometimes palliative for a time, and the disease may regress during pregnancy. Endometriosis of the bowel should be borne in mind in the differential diagnosis of partial obstruction.

The literature contains reports of 14 cases of ovarian carcinoma arising from endometriosis.

this stratum marry later in life and have fewer pregnancies than do those who are observed in clinics. He expressed belief that infrequent interruptions of menstrual cycles due to present day contraception and late marriages may well account for this greater number of cases of endometriosis. Infection does not seem to increase the incidence, as it is uncommon in the negro race.^{18,44} Blinik and Merendino³ noted endometriosis in 0.11 per cent of 4,477 cases in which laparotomy was done in the Harlem Hospital. It is also rarely encountered in South America, as cited by Greenhill¹⁸ from the observations of Correa de Costa in 1946, who noted 32 cases of endometriosis in 2,285 laparotomies, an incidence of 1.44 per cent. Data from various investigators may be compared in Table 1.

The cause of endometriosis is still unsolved although a great amount of clinical and experimental work has been reported in the literature to clarify understanding of this moot question. Sampson's⁵⁴ theory of tubal regurgitation of menstrual fluid with implantation and seeding of viable menstrual endometrium is yet to be proven. To be sure, endometrium has been transplanted in various animals and organs, but no one has proven that shed menstrual endometrium is capable of transplanting itself nor that this tissue is viable. Specimens of endometrium removed by curette at the time of menstruation and then implanted have grown, but this is in all probability impertinent, for undoubtedly the specimen obtained by this means is endometrium of the basal layer, which is known to be prolific. Tissue cultures have shown that endometrium taken at the time of menstruation is less viable than that taken during the proliferative phase. Desquamated or dislodged mucosa has been seen in the lymphatic and venous spaces, but whether this tissue is capable of implantation and growth is problematic. Keettel and

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TABLE 1.—Incidence of Endometriosis as Reported by Various Investigators

Reported by	Year of Report	Number of Laparotomies	Cases of Endometriosis	Incidence (Per Cent)
Sampson	1925	332	98	29.5
Fallas and Rosenblum	1940	15,975	1.62
Meigs	1941	400	144	36.0
		(Private practice		
		(Clinic	33	8.3
Holmes	1942	400	80	26.0
Haydon	1934	307	52	8.4
	1940	620	94	13.1
Correa de Costa	1946	713	33	1.44
Scott and Te Linde	1950	2,285	15.9
		516		

Stein²⁸ reported successful tissue culture of cast-off menstrual endometrium with the addition of penicillin and streptomycin for bacteriostasis. Te Linde and Scott⁴⁸ and Allen, Peterson, and Campbell¹ produced experimental endometriosis in monkeys by various operative procedures. Te Linde and Scott believed their work substantiates Sampson's theory, but this has been challenged by Novak and others who favor the Iwanoff-Meyer theory of coelomic metaplasia as the cause of endometriosis. Allen, Peterson, and Campbell¹ conjectured from their experimental work that if menstrual discharge does bring about endometriosis, there must be an irritating substance as an etiologic factor that passes through the myometrium and mucosa. Their experiments in monkeys with the transected cervix implanted extraperitoneally suggested heteroplasia rather than transplantation, and this view supports the coelomic metaplasia theory. Scott and Te Linde⁴⁸ took venous blood from a monkey's vein at the time of menstruation and injected it intraperitoneally in four animals without bringing about endometriosis. This suggests very strongly that venous blood lacks some component substance that is capable of causing coelomic metaplasia and resulting endometriosis.

The coelomic metaplasia theory in simple form merely is that the müllerian duct is derived from the embryonic coelomic epithelium and mesenchyme, and forms most of the female genital tract, including the endometrium. Other adult tissues derived from coelomic epithelium may retain the potentiality of forming tissue which is indistinguishable from endometrium. Just what stimulates this differentiation of tissues, whether hormones or what not, is still a mystery. It is felt by most investigators that this theory explains most adequately the greatest distribution of endometriosis, coupled with an embryologic basis, as explained by Gruenwald.

Another theory known as the "metastatic spread" theory was offered by Halban and Sampson and was championed by Javert.²⁴ This really deals with a mode of spread rather than the cause of endometriosis. It explains very well the involvement of lymphatic nodes in the pelvis, the groin and along the channels to the round ligaments, and venous chan-

TABLE 2.—Fertility in Patients with Endometriosis as Reported by Various Investigators

Reported by	No. Cases	Per Cent Fertile
Counsellor	131	32.1
Payne	238	40.0
Haydon	168	53.0
Keene and Kimbrough	118	40.9
Jenkinson and Brown	39	34.0

nels through the vertebral circulation to distant points of involvement, such as the arms and legs. But whether these findings within lymph nodes are due to metastasis of endometrial cells or are due to metaplasia of the lymphatic endothelium and stromal cells is not known. Nor is it known if the endometrial tissue within these lymphatic spaces or venous spaces is capable of propagation. It is generally felt that no single explanation seems to fit all situations, but that one theory may be applicable in some cases and another theory in others.

The symptoms of endometriosis vary in frequency and intensity, although in this regard some of the reported variation may depend upon the observers evaluation. Some patients with extensive involvement in the pelvis may have little in the way of pelvic discomfort or pain, while others with small lesions along the uterosacrals and in the cul de sac may complain bitterly of dyspareunia and pressure on the rectum with pain extending to the back and radiating down the legs. The classical symptoms of progressive dysmenorrhea, menorrhagia, metrorrhagia, dyspareunia and infertility may all be present or lacking in an individual case. At times menorrhagia is a prominent symptom, particularly if associated with other pelvic pathologic conditions such as fibroids, endometrial hyperplasia or polyps. On the other hand, with minimal lesions it may be entirely absent as a symptom. Infertility is relative and frequently is the factor that causes the patient to consult a physician. Reynolds and Macomber expressed belief that the normal fertility rate in marriage is about 88 per cent. In patients with endometriosis, the percentages of fertility noted by various investigators are shown in Table 2.

Because pregnancy is frequent enough following

conservative operation, when it is possible in endometriosis, the surgeon must always bear in mind the importance of preserving the childbearing function. The treatment should be individualized to suit the case under consideration, for it is impossible to make rules to fit all cases. If the disease is not too extensive, conservative operation should be employed to preserve the possibility of future pregnancy, with the patient's full understanding that further operation may be necessary in the future.

In the majority of cases, as was pointed out by Sampson,⁵⁴ the tubes may be patent (both tubes were patent in 284 of 293 cases of endometriosis). The ovaries may be extensively involved but the endometrial cysts may be dissected out and some ovarian tissue conserved. Smaller areas of endometriosis may be resected or destroyed by cautery unless they involve the muscle layer of the bowel, particularly in the rectovaginal septum. If, however, one explores a patient of any age and there is found extensive involvement with implants involving the sigmoid, rectum or ileum, it may really be conservative to be radical and remove both ovaries, both tubes and the entire uterus. If that is done, the residual small endometriomas in the bowel wall will regress and the bowel will return to normal function, unless too much scarring has occurred. In that event resection may become necessary. The ovaries should never be removed and the uterus left in situ. Total hysterectomy should be practiced if it is at all possible without adding too much risk to the patient's survival. With extensive involvement in the cul de sac and rectovaginal septum, great care must be exercised not to injure the rectum; this entails staying in good cervical tissue in the dissection and leaving endometriosis on the bowel wall. Many observers have set 45 years as the age limit for conservative operation if the patient desires to have a family; and they carry out radical operation if the patient is beyond this age. One must still keep in mind that the treatment of endometriosis is surgical and therefore destructive in principle. Since ovarian function is essential in the metabolism of bone and skin of woman, this tissue should be conserved whenever and for as long as possible.

Physicians must keep the possibility of endometriosis in mind and include it in differential diagnosis if the more unusual lesions of the intestinal tract are to be recognized. Recurrent abdominal pains and symptoms of partial obstruction appearing during the premenstrual phase must arouse suspicion of bowel endometriosis. The sigmoid and rectum are more frequently involved than the small bowel. The lesion encroaches on the bowel lumen from without and a mass may be palpated on rectal examination. The patient may have pain on defecation, particularly during menstruation, and there may be a slight

amount of rectal bleeding at this time if the lesion has eroded the bowel mucosa. Proctoscopic examination may show the mucous membrane to be intact and x-ray examination may be of great aid in such cases by showing an extrinsic lesion with normal appearing mucosal pattern. The crux of the situation is that the lesion may be confused with carcinoma of the rectum or sigmoid and a colostomy performed for a benign tumor. This should not occur if one keeps the possibility in mind. Examination of a frozen section before definitive operation is done may save the day. Proper bowel preparation is imperative if there is a possibility that resection of the large bowel will be carried out. However, as was stated before, the bowel lesions will recede with total ablation of the ovaries, so resection is rarely necessary.

Obstruction of the ileum by endometriosis presents a less characteristic picture than that of the large bowel. Vomiting is a frequent symptom, diarrhea is infrequent and constipation is rare. X-ray films may demonstrate obstruction of the small bowel. It may be confused with appendicitis and certainly will be missed in the differential diagnosis unless endometriosis is constantly kept in mind and the symptomatology is correlated with the menstrual cycle. A pelvic and combined rectal-pelvic examination may aid greatly in the diagnosis, if endometriomas are palpable in the cul de sac or along the uterosacral ligaments.

Endometriosis is probably much more often associated with pregnancy than one would be led to believe from the current literature. Many women become pregnant with minimal lesions and the diagnosis is not made during the prenatal examination, delivery, or puerperium because the course has been normal and nothing has brought the condition to the attending physician's attention. The most common site is in the cul de sac, the rectal shelf or along the uterosacral ligaments. The lesions usually increase in size and are firm until about the fourth month; then they begin to soften and recede, so that at times it is difficult to know such a process is present unless it had been previously noted.

In 1944 Scott⁴² searched the literature for cases of endometriosis complicated by pregnancy. He found reports of 11, involving the posterior cul de sac or rectovaginal septum. The ovaries were involved next most frequently. There were four such cases and he added reports of two more, in one of which the patient had a ruptured ovarian endometrioma, caused by tearing of adhesions by the enlarging uterus. In the second case the patient, in early pregnancy, had a right ovarian cyst the size of a grapefruit. At operation there was found also a small chocolate cyst on the left ovary, which could be resected. There were adhesions between the right

ovary and broad ligament, and in the region of the lower segment and sigmoid colon. This area was stained with old chocolate material, although no leaking area could be demonstrated. The postoperative course was uneventful and antinatal progress was normal. Spontaneous labor occurred in the thirty-fifth week and a boy weighing 2,390 gm. was delivered. The blood pressure and urine were normal but the placenta showed a small area of separation.

Scott also noted reports of cases in less common sites associated with pregnancy—two cases of cervical endometriosis, one case in the anterior cul de sac, one case in the inguinal canal associated with endometriosis of the appendix, and one case of endometriosis of the ileum with rupture of the viscus and generalized peritonitis. He emphasized that the medical profession should be cognizant of the potential problems that can arise in pregnancy with endometriosis, although most cases terminate in an uneventful manner.

Following are reports of two additional cases in which pregnancy was complicated by endometriosis.

CASE 1. The patient, a housewife, became pregnant for the first time after nine years of marriage. The last menstrual period had been January 11, and the estimated date of confinement was October 18. Catamenia had begun at age 13 and periods had been regular with dysmenorrhea and backache the first day. The prenatal course and results of physical examination and laboratory studies were all normal until September 27, when the patient complained of pain in the left lower quadrant of the abdomen, radiating to the flank and down the left leg. There was no regularity to the pain but it was constant and sharp in character. The patient was hospitalized for observation. Upon physical examination, increased tone and generalized tenderness over the uterus were noted. Fetal heart tones were normal. Shortly after entering the hospital the patient had some painless vaginal bleeding for the first time. A diagnosis of premature separation of the placenta with concealed hemorrhage was made and cesarean section was carried out. A boy weighing 7 pounds 4 ounces was delivered.

The placenta was separated by an old clot of approximately 350 to 500 cc. The uterus was mottled and did not contract well despite massage, intravenous administration of ergotrate, injection of pituitrin into the muscle and hot packs. The uterine wound was closed in layers and the bladder flap of peritoneum was about to be sutured in place when it was decided to remove the uterus because of uterine apoplexy (Couvelaire uterus). On the left ovary was an endometrioma that had torn prior to operation and was leaking thick old chocolate material which had stained the posterior leaf of the broad ligament and rectosigmoid. The right ovary was plastered down to the right broad ligament by an extensive endometriotic process and the cul de sac was obliterated by an endometrioma. A right sal-

pingo-oophorectomy, subtotal hysterectomy and resection of the left ovary were accomplished. The postoperative course was uneventful. The patient was examined regularly thereafter, and nine years later the patient complained for the first time of a feeling of pressure in the lower abdomen and rectum, radiating into the low back. Androgen therapy relieved the symptoms.

CASE 2. A white housewife, 26 years of age who had been married four and a half years without becoming pregnant sought examination for determination of fertility. Catamenia had begun at age 14. Periods lasted four days and were 24 to 25 days apart. Bleeding was scant. The patient had backache but not dysmenorrhea. Third degree retroversion of the uterus and slightly tender small nodules in the cul de sac were noted upon pelvic examination. The nodules were believed to be endometriotic. In the succeeding four months the nodules in the cul de sac increased in size and became more tender. The patient complained of dyspareunia. Laparotomy, right oophorectomy, a Coffey suspension and appendectomy were carried out. The cul de sac was obliterated by endometriosis, a firm adhesive process.

Some three months after operation the patient became pregnant. Slight vaginal bleeding in the third month of pregnancy was controlled by bed rest and administration of stilbestrol. Otherwise the prenatal course and results of physical examinations and laboratory studies were all normal.

Two weeks before the estimated date of confinement the patient complained of left lower abdominal discomfort and pain radiating into the rectum and inner aspect of the left thigh. The pains were not regular. On the way into the hospital the patient had a severe vaginal hemorrhage. Conditions noted at examination were compatible with premature separation of the placenta. The baby was well engaged, fetal heart sounds were satisfactory and they were heard in the left lower quadrant of the abdomen.

Cesarean section was carried out. When the peritoneal cavity was opened, some free blood was encountered and there was blood staining of the uterine serosa. A 6 pound 6 ounce girl was delivered. Upon exploration of the pelvis after the cesarean section, a small left ovary with decidual reaction was noted. The tubes appeared normal, and apparently the endometrioma in the cul de sac had been changed by decidual reaction and had become bisected by the development of the lower uterine segment so that the serosa of the lower uterine segment, the cul de sac and the rectum had the shaggy appearance of the separation of two slices of bread and butter. The serosa exuded free blood, which undoubtedly accounted for the blood in the peritoneal cavity and the bizarre symptoms, not pertinent to the onset of labor, complained of by the patient.

Three and a half years later the patient became pregnant again and after a normal prenatal course a normal term boy was delivered by cesarean section. Upon exploration of the cul de sac at that

time some old thickening was noted, but no definite endometrioma.

The medical profession is cognizant of improvement during pregnancy in patients with endometriosis, but neither the nature nor the cause of this change is understood. Maybe the second of the two cases reported, and others like it, will help toward a clearer understanding of how nature manages to improve the lesions.

Some investigators have noted similarity of the change that endometriosis undergoes during pregnancy to the change that takes place when large doses of estrogenic hormones are employed. Karnaky,²⁶ Hurxthal,²³ and Cooke⁶ reported cases in which dramatic change was noted during estrogenic therapy. The treatment must be carried out for a period of three to nine months or more and, unfortunately, endometriosis returns after a variable length of time. There are very definite side effects with this mode of treatment, such as hemorrhage, psychosis, increased pigmentation, edema of the vulva and other manifestations of water imbalance. Since only a short period of relief is obtained, some investigators have expressed preference for use of the male hormone. Even with androgens, however, there are undesirable effects that must be watched for, such as water imbalance, hirsutism and voice changes. These effects are usually avoided by small doses, 300 mg. or less a month, but even so the possibility of side effects should be explained before therapy, lest the patient suffer psychic embarrassment.

Still, surgical operation in some form is the treatment of endometriosis. It should be conservative when possible, but the probability that further operation may be necessary in the future should not be minimized. It is important to avoid castration as long as possible because of the undesirable postmenopausal changes in skin and bone. At times x-ray therapy to the remaining ovarian tissue after conservative operation may be necessary, particularly in the presence of bowel involvement. X-ray should never be used without surgical proof of existing endometriosis—certainly not on clinical suspicion alone. Presacral sympathectomy and ovarian neurectomy in association with conservative operation have been advised by numerous investigators, but as time moves along there are fewer ardent advocates for these procedures.

Another facet that must be touched upon is the possibility of malignant disease arising from endometriosis. It is taught in medical schools and mentioned in textbooks that here is a lesion which invades its neighboring structures like a malignant growth but rarely takes on the potentiality of a carcinoma. Novak,³⁵ Scott,⁴³ Sampson⁵³ and others have questioned the histologic derivation of certain carcinomas of the ovary as arising from endometri-

osis. The condition is rare, to be sure, but undoubtedly a possibility. It is difficult to prove, because usually when an ovarian carcinoma comes to one's attention it is so extensive that it would be folly to hazard a guess as to origin. Sampson⁵³ postulated very rigid criteria for such a diagnosis: The co-existence of benign and malignant tissue in the same ovary which have the same histologic relationship to each other as in endometrial carcinoma of the uterine corpus; the carcinoma must be seen to arise in this tissue and not to be invading it from some other source. Additional evidence includes the finding of tissue resembling endometrial stroma surrounding characteristic glands with old hemorrhage.

Scott⁴³ in 1953 found reports of 12 cases in the literature, and Postloff and Rodenberg³⁷ in 1955 found 13 cases of carcinoma of the ovary that fulfilled Sampson's conditions for proving endometrial origin. They added one case of adenoacanthoma, bringing the number to five reported cases to arise from endometriosis, in which it was possible to demonstrate both benign and malignant lesions in the same tissue. Fourteen cases out of the total number of cases of endometriosis is certainly a very few, but it is probable that if all cases were reported the incidence would be greater.

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Serum Transaminase

A Test to Aid in Diagnosis of Cardiac Infarction

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A SIMPLE and inexpensive laboratory test to aid in the diagnosis of myocardial infarction is now available.^{1,3} The basis of this test can be stated in general terms. When tissue is severely damaged the cellular contents may find their way into the circulating blood. If there is in this material a substance which is characteristic of the tissue involved and this substance is stable in the blood and capable of being analyzed, the means are then at hand for an analysis of blood which will indicate specific tissue destruction. The test under discussion is based on the observation that the enzyme glutamic-oxalacetic transaminase meets these criteria. It is present in high concentration in heart muscle, in somewhat lesser concentrations in skeletal muscle and in decreasing concentration in other tissues. The amount in normal blood is quite low. Within a few hours following myocardial infarction the amount of transaminase in the blood increases, a peak being reached within 12 to 24 hours. The amount of the enzyme then decreases rapidly until a normal value is again observed four to six days after the infarct.

The relationship between the amount of transaminase in tissue and the amount which appears in the blood following damage to that tissue is not a simple one, as can be shown by a few examples. Brain tissue is relatively high in transaminase content, but infarction does not cause this enzyme to appear in the blood.² While the liver tissue is considerably lower in transaminase than heart muscle, damage to the liver gives rise to very much greater values of transaminase in the serum than is the case with myocardial infarction.⁵ Although the mechanism involved is far from completely understood, it does appear that the level of transaminase in serum is elevated when there is extensive and rapid damage to certain of the tissues which contain large quantities of transaminase.

Although many diseases have been studied, only a few cause an increase in serum transaminase.

• Within 24 hours following myocardial infarction there is a pronounced increase in the level of the enzyme glutamic-oxalacetic transaminase found in the serum. This enzyme can be detected in serum by a rapid and convenient procedure. An increase in the level of serum transaminase is typical of only a few pathological conditions all of which can readily be distinguished from myocardial infarction by other methods.

These include, in addition to myocardial infarction, several other conditions which bring about severe destruction of heart muscle, such as rheumatic carditis or myocarditis,⁴ or severe damage to the liver including metastatic lesions in the liver, or damage to skeletal muscle as by certain surgical procedures. All these conditions are usually readily distinguishable from myocardial infarction.

In order to determine the amount of transaminase in a specimen of serum, aspartic acid and alpha-ketoglutaric acid are added. The enzyme catalyzes the transfer of the amino group of aspartic acid to alpha-ketoglutaric acid to produce glutamic acid and oxalacetic acid. The amount of oxalacetic acid produced is then measured, using another enzyme system, malic dehydrogenase, which converts oxalacetic acid to malic acid in the presence of reduced diphosphopyridine nucleotide (DPNH). For each mole of oxalacetic acid reduced, a mole of DPNH is oxidized. Since DPNH has a strong absorption band at 340 millimicrons and this band disappears when the material is oxidized, the course of the reaction can be followed readily in a spectrophotometer by observing the decrease in absorption at 340 millimicrons.

The assay is performed by adding to 0.1 ml. of serum or plasma, 0.5 ml. of 0.2 molar aspartic acid solution adjusted to pH 7.5, 0.1 ml. of reduced diphosphopyridine nucleotide solution containing 2 mg. per ml., 0.1 ml. of solution of purified malic dehydrogenase containing 2,000 units per ml. and 0.1 molar phosphate buffer pH 7.5 to make a final volume of 2.8 ml. This mixture is allowed to stand at room temperature for ten minutes to consume endogenous substrate, after which 0.2 ml. of a 0.1

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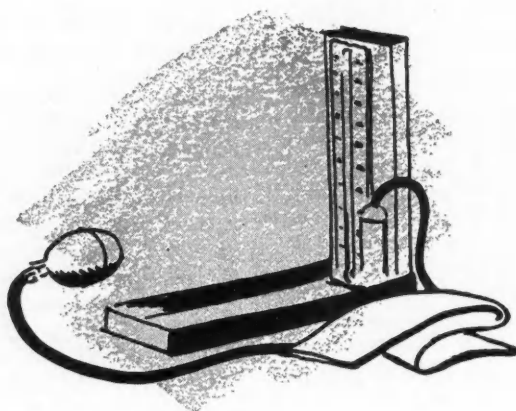
From the California Foundation for Biochemical Research, Los Angeles 65.

molar solution of alpha-ketoglutaric acid in buffer, final pH 7.5, is added and the mixture placed in a spectrophotometer. The absorption at 340 millimicrons is observed at intervals for several minutes. One unit of transaminase activity is defined as the activity in 1 ml. of the serum which causes an optical density decrease of 0.001 in one minute under these conditions. The transaminase activity of normal serum varies from 10 to 40 units per ml. In myocardial infarction the level rises to about 150 units per ml., although there is a wide range of values with some as high as several thousand units per ml.

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Scalene Node Biopsy

An Analysis of 42 Cases

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IN 1949 Daniels⁵ reported the examination of scalene lymph nodes in the diagnosis of certain intrathoracic diseases. Immediately the Department of Thoracic Surgery at the Los Angeles County Harbor General Hospital began to apply this procedure to a group of patients with pulmonary disease presenting diagnostic problems. This report is intended to evaluate the usefulness of this special type of biopsy in a variety of intrathoracic conditions.

The basis of the scalene node or fat pad biopsy is that lymph nodes anterior to the scalenus anticus muscle are connected to the mediastinal nodes. Thus intrathoracic disease involving the mediastinal nodes may often be reflected in the scalene nodes. The same is true of systemic disease directly involving the mediastinal nodes. The simple scalene node biopsy, hence, is in a way, biopsy of the mediastinal nodes without the necessity of entering the thorax.

Data on 42 cases were available for the present study. It is important to emphasize that only two of the patients had enlarged lymph nodes on physical examination. All had abnormalities in x-ray films of the chest—a hilar mass in 20 cases, some mottling in eight, effusion in nine, calcification in two, and a nodular shadow in three. Ages ranged from 18 to 88 years. There were 32 males and 10 females. On admission, the chief complaint was related to the chest in only 50 per cent of the cases. The clinical impression of the senior resident staff was correct in 19, incorrect in 16, and deferred in seven cases. Twenty-one of the patients had bronchoscopic examination and in 12 cases abnormalities were noted. In two cases diagnosis was made on the basis of a bronchoscopic biopsy specimen. Cytologic studies of bronchial washings from the 21 patients were diagnostic in two more cases. Sputum examination was of no value even in the study of the patients who had tuberculosis. Only one patient with lobar pneumonia showed pneumococci on culture. Four cases were diagnosed by other means, such as pleural fluid study or bone marrow biopsy. Therefore, in 33 of the 42 cases included in this series, the diagnosis of the pulmonary lesion was entirely dependent on the scalene node biopsy.

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Submitted December 2, 1955.

• Scalene node biopsy was done in 42 patients with previously undiagnosed intrathoracic lesions. A definite histologic diagnosis was obtained in 25 patients.

Scalene node biopsy is not only a valuable diagnostic procedure for intrathoracic lesions, but many times it may obviate the necessity of exploratory thoracotomy. If a diagnosis of carcinoma of lung is established by scalene node biopsy, the operability of the patient and the type of pulmonary resection should be carefully evaluated.

Right scalene node biopsy was done 21 times and a left 19, including two patients who had bilateral biopsies. In four cases the site was not stated. Selection of the side for biopsy was based on Rouvière's⁸ description of the lymphatic drainage of the human lung. If the lesion was on the right side, only right scalene biopsy was performed, because the drainage is via the right paratracheal chain. Similarly with lesions in the left side of the chest. Since lesions in the left lower lobe, however, may metastasize to the subcarinal nodes and then up the right paratracheal chain, a bilateral procedure was done in such cases. For lesions in the left upper lobe, only the left side was explored.

A definite histologic diagnosis was obtained in 25 of the 42 cases in which 44 scalene node biopsies were done. Results were as shown in Table 1. Results of scalene node biopsy reported by other investigators are shown in Table 2.

Complications following scalene node biopsy are infrequent. Hemorrhage occurred in one case in the series, due to injury to the jugular vein, but it was readily controlled.

TABLE 1.—Results of 44 Scalene Node Biopsies in 42 Patients with Undiagnosed Lesions in the Chest

	Diagnosis from Biopsy	Final Diagnosis, by Exploration, Autopsy, etc.
Carcinoma of the lung.....	9	13
Metastatic tumor to lung.....	8	14
Pulmonary tuberculosis.....	3	5
Lymphoma, generalized or localized..	3	3
Pneumonia.....	—	3
Anthraxis.....	1	1
Sarcoidosis.....	1	1
Undiagnosed.....	—	2

TABLE 2.—Results of Scalene Node Biopsy Reported by Various Investigators

Author	Number of Patients	Positive Biopsy (Per Cent)	Per Cent with Carcinoma of Lung
Shefts et al ⁸	187	35.8	6
Harken et al ⁶	142	31.7	68
Cuykendall ⁴	41	22	34
Carstensen et al ²	56	64
Yang	42	59.5	62

Particular emphasis should be placed upon the usefulness of scalene node biopsy in patients with bronchogenic carcinoma. In this disease the value of this biopsy is two-fold: (1) A diagnosis may often be obtained without thoracotomy; (2) in such cases, and also in those where the diagnosis has been made by other means, the procedure is of value in determining the prognosis. When a scalene node biopsy is positive for cancer, it is obvious that there has been considerable extension of the carcinoma; operability is then questionable.

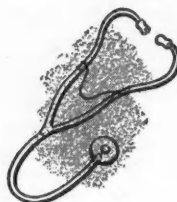
The average of the five-year salvage rates reported by Overholt and Schmidt,⁷ Adams,¹ and Churchill³ is about 12 per cent when the mediastinal nodes are involved. It seems reasonable to question, first,

whether any five-year survival rate could be achieved when nodes outside the chest cavity are involved.

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Coccidioidomycosis

Treatment with Isonicotinic Acid Hydrazide

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ISONICOTINIC ACID HYDRAZIDE (INH) has been widely used in tuberculosis and also with some success in the treatment of nontuberculous diseases, such as actinomycosis⁹ and lupus erythematosus,³ and with equivocal results in sarcoidosis.^{4,6} It is the purpose of this communication to report the apparent success of such therapy in two advanced cases and one moderate case of coccidioidomycosis. Disseminated coccidioidomycosis is often fatal and since coccidioid granulomata are histologically typical granulomata with tubercle-like formations, indistinguishable from those seen in tuberculosis, it seemed logical to initiate a therapeutic trial with INH in established cases of coccidioidomycosis. Whether the patients recovered because of the use of the drug or in spite of it, as with other drugs that have been tried, may be questioned, for adequate controls are not possible in so limited a number of cases. It is known, however, that advanced or progressive coccidioidomycosis is very resistant to treatment and again it must be remembered that, as in many other diseases, many patients recover with symptomatic treatment.

In 1953 Tager¹³ reported on the use of INH in experimental coccidioid infection in mice and found it ineffective. In vitro experiments, however, demonstrated inhibition of coccidioides cultures when INH concentrations of 1,000 gamma per ml. were used, but it was ineffective in 100 gamma and 10 gamma per ml. concentrations. However, INH appeared to be effective in the cases herein reported, which gives rise to question whether the situation might not be somewhat analogous to that of sporotrichosis, in which iodides have been considered essentially specific therapy. The mechanism by which iodides are effective in sporotrichosis is not known and although they are curative in man, sporotricha thrive well on agar medium containing potassium iodide in 10 per cent concentration. Iodides do not prevent experimental sporotrichosis in rats, but infected rats can be cured by iodide therapy.¹⁰ Studies with INH in culture and animals may not have been extensive enough, in view of the clinical case results.

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Submitted March 23, 1956.

• Since coccidioid granulomas are histologically indistinguishable from tuberculous granulomas, a long course of isonicotinic acid hydrazide therapy was tried experimentally in three cases of coccidioidomycosis, with good results. In two cases the disease was far advanced and prognosis poor before INH therapy was begun. In one case the disease was mild and symptoms abated after a short course of small doses of INH. It recurred when INH therapy was discontinued, and again resolved when larger doses of INH were given over a longer period.

INH seemed to have an effect on appetite also, although the patients were taking B-complex vitamins both before and during INH treatment. The three patients ill with coccidioidomycosis averaged a weight gain of four and a half pounds a month during the period of INH therapy. Six well persons who were underweight and lacked appetite were given INH without other drugs, and they then had an increase in appetite and in weight.

Again, *Coccidioides immitis* has been reported by Feise, Chen and Sorenson⁵ as existent in two phases, the saprophytic and the parasitic. In the former the fungus appears as a mycelial mass of hyphae, occurring in nature and culture media, while in the parasitic phase the fungus has the appearance of an endosporium or spherule that occurs in animal tissues. This could account for differences in experimental results. Furthermore, different strains of *Coccidioides immitis* conceivably could show differences in response to INH and further laboratory studies will have to be conducted to elicit such information. Clinically, there will continue to be experimental difficulties too, because one cannot run a long control period in such patients and one is usually limited in the number of advanced cases available for long term study. Nevertheless, clinical repetition of cures merits a report if a drug such as INH has appeared logically effective, as in the present cases in which previous treatment served as a "control period."

There is a diversity of therapy and results in coccidioidomycosis. The following have been tried and failed in the treatment of advanced infections: Arsphenamine, antimony and potassium tartrate, gentian violet, thymol and related compounds, copper, iodides, sulfonamides, penicillin, streptomycin,

aureomycin and chloramphenicol.² Improvements and possibly some cures have been reported with Mycostatin,¹² coccidioidin, prodigiosin² and 2-hydroxystilbamide.¹¹ Recently, sodium caprylate, ethyl vanillate, stilbamidine, thiolutin and remocidin have been shown to have good in vitro antifungal activity against *Coccidioides immitis*.²

There are some further therapeutic considerations in the clinical use of INH. Administration of INH produces a propensity to bleed in about two weeks. This effect abates within 60 days, according to a report by Krasner⁷ in 1954. In the same year Biehl and Vilter¹ were able to prevent neuritis in patients who received large doses of INH by giving pyridoxine concurrently. Apparently there is metabolic competition between INH and menadione, pyridoxine, niacin and possibly other B-complex factors. Metabolically this suggests a possible approach to a study of the mechanism of activity. Meanwhile, it implies therapeutic supplement of these factors when treating patients with INH to avoid deficiency sequelae. Therefore, it was logical therapy to incorporate vitamin B-complex and vitamin K as supplemental therapy, as this was learned from the current literature on the treatment of coccidioidomycosis with INH. To offset possible sequelae during periods of physiological stress, of severe illness or of possibility of tissue depletion of vitamin, one of the brands of multiple vitamins was prescribed in the cases herein reported. On a prescription basis the following has therefore been devised so that the medicaments may be given as a single medicinal form useful in early or advanced coccidioidomycosis treatment and thus fulfill the known scientific clinical criteria for INH usage.

Rx

Acetylsalicylic acid powder	645 mg.
Isonicotinic acid hydrazide powder	100 mg.
Vitamin K powder (menadione)	2 mg.
B-complex powder	50 mg.

Make 360 capsules.

To be taken one capsule three times a day after meals.

The prescription devised is intended for four months' use. The prescription may be varied according to indications.

REPORTS OF CASES

CASE 1. A 22-year-old negro man, a resident of California, was first admitted to the hospital on January 14, 1953, for mild sore throat, fever and polyarticular pain. Upon physical examination the only abnormalities noted were inflamed throat and painful joints. Results of laboratory tests were within normal limits. The patient had good response to acetylsalicylic acid, 0.6 gm. daily in three doses, and was discharged February 2, 1953. On February 14, 1953, he was readmitted to the hospital with the same complaint. Results of examination of the blood

and of urinalysis were within normal limits but the blood sedimentation rate was 28 mm. in one hour. He was kept at bed rest and acetylsalicylic acid, 0.6 gm. every four hours, was given until the sedimentation rate returned to normal on February 26, 1953. He was then discharged. On June 29, 1953, he was readmitted to the hospital with complaint of precordial pain, anorexia and loss of weight. Moist, musical rales were heard throughout the left upper chest. The temperature ranged from 103° to 104° F. The blood sedimentation rate was 35 mm. in one hour. Leukocytes numbered 12,700 per cu. mm., 77 per cent polymorphonuclear cells.

An x-ray film of the chest showed areas of soft infiltration in the left upper lobe, representing possible tuberculosis of indeterminate activity. A cold agglutination test was positive at 1:128 dilution and the results of coccidioidin and tuberculosis skin tests were negative. Microscopic examination and cultures of sputum were carried out but no pathogenic organisms were observed until August 23, 1953, when many double-contoured cells resembling *Coccidioides immitis* were noted. Typical colonies of *Coccidioides immitis* grew on a culture. On September 23, 1953, an x-ray film of the chest showed pronounced increase in the density of the entire left pulmonary field. Before the diagnosis of coccidioidomycosis was made, the patient had been given antibiotic and antipyretic drugs, for the x-ray consultant had concurred with a diagnosis of atelectasis and pneumonitis but had suggested the possibility of lymphoblastoma, Friedlander's bacillus pneumonia, or Boeck's sarcoid. The patient continued to have fever, and repeated x-ray films showed progression of the pulmonary lesion. Several blood transfusions were given because of progressive anemia. The body weight, which was 137 pounds when the patient was first observed, was 134 pounds.

On November 13, 1953, administration of potassium iodide, saturated solution, 15 drops three times a day after meals, was begun. Fever continued and the patient showed no improvement. On November 27, 1953, administration of isonicotinic acid hydrazide (Niconyl®), 100 mg. three times a day, was begun. It was continued four months. The patient was afebrile within 14 days after INH therapy was started, except for an occasional 99° F. or 100° F. He was also receiving multi-vitamins (Diketan), one tablet three times a day. X-ray films of the chest began to show gradual clearing, the patient had increased appetite, a gradual gain in weight, and no fever. The sputum was negative for *Coccidioides immitis* on March 22, 1954, and final x-ray films of the chest were essentially normal.

This was a most interesting case, for it encompassed the development of pulmonary coccidioidomycosis from the earliest stage, difficult to diagnose, to an advanced stage; from mild illness to severe illness with prognosis very poor, and then favorable response only to therapy with INH (Niconyl). The patient was given such supportive and symptomatic therapy as was indicated throughout the long course

of the disease, such as high-caloric diet, multiple vitamins, antipyretics, fluids, transfusions of blood and complete bed rest. He was discharged, asymptomatic and well on April 6, 1954. The body weight then was 161 pounds. Observed from time to time at another clinic in Los Angeles, the patient had remained well for two years at the time of last report.

CASE 2. A 23-year-old negro man, a California inhabitant, was given an entrance examination January 21, 1953, upon enrollment at the Chino Guidance Center, and all medical questions were answered in the negative. The body weight was 137 pounds, the height 67 inches. Third degree pes planus and moderate thoracic kyphosis were noted. A serologic test was negative for syphilis. In 1946 the patient had had tetanus, typhoid, pertussis and influenza immunizations. He was transferred to California Institution for Men on March 16, 1953, and after transferral reported to the outpatient clinic six times with complaint of pains in the right foot, leg and thigh. Conservative measures with physiotherapy and analgesic drugs were without results and on July 16, 1953, he was admitted to the hospital for further study. At this time he gave a history of having had sore throat and "flu-like" symptoms three weeks prior to the initial examination at Chino. The chief complaints upon admittance to hospital were constant aching in the right hip and leg, a decrease of 15 pounds in body weight, moderate polydipsia and mild dyspnea.

The temperature fluctuated from 99° F. to 102° F. during the period in hospital, until just before discharge on September 5, 1953.

The abdomen was flat but tender in the lower abdominal quadrants. Upon rectal examinations, the lower quadrant tenderness was observed to be more pronounced on the right, but no masses were felt. Motion in the right leg was limited by pain and tightness in the adductor muscles and there was noticeable atrophy of muscles of the right thigh. The patient had a peculiar gait, with the right leg thrown upward and forward, suggesting a slight foot drop. The power of abduction and adduction in the right leg was poor. The knee jerk and ankle clonus of both right and left legs were exaggerated. The result of a coccidioidin skin test was negative.

The blood sedimentation rate was 40 mm. in one hour. The hemoglobin value was 59 per cent. Erythrocytes numbered 2.96 million per cu. mm., and leukocytes 6,800 per cu. mm. with 40 per cent polymorphonuclear cells, 8 per cent monocytes, 2 per cent stab cells, and anisocytosis and poikilocytosis. The blood type was B, Rh positive. The result of a glucose tolerance test was abnormal but not typically diabetic. Urinalysis was within normal limits and Bence-Jones protein was absent. The results of gastric analysis were essentially normal. No abnormality was noted in the feces. Agglutination tests were negative for typhoid, tularemia and Brucellosis. No abnormalities in the chest, pelvis or spine were observed in repeated roentgenographic

examinations. The patient was given two blood transfusions, crude liver injections and acetylsalicylic acid for anemia and an infectious process of undetermined cause. By September 5, 1953, he had improved sufficiently to be discharged. Two months later he was readmitted because of two large separate fluctuant masses on the lateral aspect of the right hip. Ten centimeters of fluid material was aspirated from the masses under sterile conditions, and two incisions were made into each mass at the most dependent points. From 10 to 12 ounces of odorless, yellow-green, freely running material was expressed from each mass and a seton-type drain introduced. Upon examination of the aspirated contents, double contour bodies with endospores characteristic of *Coccidioides immitis* were observed. *Coccidioides immitis* grew on cultures. The disease was considered disseminated coccidioidomycosis, the disseminative process confined evidently to two granulomas which developed into abscesses. Therapy for the next four months consisted of changes of dressings, administration of 0.6 gm. of acetylsalicylic acid three times a day, INH (Niconyl) 100 mg. three times a day, a multiple vitamin preparation (Hexa-vitamins, two capsules daily) high caloric diet and bed rest. By February 4, 1954, there was little drainage, granulation had begun in the abscessed areas, appetite was good and the body weight had begun to increase. On March 30, 1954, the patient was discharged from the hospital with instructions to return for changes of dressings. No residual effects from the severe and prolonged illness were noted. The patient remained well.

CASE 3. The patient, a 27-year-old negro man, a California inhabitant, was given a routine medical examination at the Chino Guidance Center on May 11, 1955. The only abnormalities observed were an umbilical hernia and a questionable miniature x-ray film of the chest. The patient was 69 inches tall and weighed 142 pounds. An x-ray film of the chest on July 25, 1955, showed an area of increased density in the lower right lobe.

On August 29, 1955, the patient was hospitalized because after running 100 yards he felt dizzy and coughed up blood. During the preceding month he had had a cough which was present only on arising, and he expectorated thick, yellow mucus.

Upon physical examination the chest was observed to be symmetrical and without dullness to percussion, but sibilant and sonorous rales were heard on both inspiration and expiration. The preliminary diagnosis was acute, mild, bronchial asthma, probably of infectious nature. An x-ray film on August 29, 1955, showed localized pneumonitis in the lower right lobe. A culture of sputum September 2, 1955, on solid media showed a rapidly growing structure, white in color, with abundant delicate mycelia. Upon microscopic examination of a wedge of the colony, hyphae with dark-staining internal bodies, considered arthrospores, were seen. From this and a subsequent culture, coccidioidomycosis

was diagnosed. The patient was afebrile. Leukocytes numbered 6,350 per cu. mm. and the blood sedimentation rate was 17 mm. in one hour. The patient was not ill and a trial of minimal therapy was decided upon since the illness was mild and had been diagnosed early. For three weeks only INH (Nydrazid), 50 mg. three times a day, was given. By September 20, 1955, the blood sedimentation rate was 12 mm. in one hour, the density observed in an x-ray film of the chest decreased and, as the patient was asymptomatic and not raising any yellow sputum, he was discharged and thereafter was observed in the outpatient clinic periodically for the next two months. By November 14, 1955, he was expectorating yellow sputum again and he was rehospitalized for further study although he was not ill. The sputum was positive for *Coccidioides immitis* and an x-ray film of the chest showed increasing soft tissue density in the right lower lobe as before. Results of precipitin, complement fixation, and skin tests were negative. Sibilant and sonorous rales were heard in the entire chest on numerous occasions. The patient was unaware of any asthmatic wheezing. The sedimentation rate was 14 mm. in one hour. Leukocytes numbered 9,780 per cu. mm.—63 per cent polymorphonuclear cells and 37 per cent lymphocytes. The hemoglobin content was 14.9 gm. per 100 cc. of blood, and erythrocytes numbered 5,000,000 per cu. mm. Nydrazid was given, 100 mg. three times a day. The patient also received B-complex, one tablet three times a day orally, and vitamin K, 5 mg. daily, intramuscularly. A high caloric diet was prescribed and the patient was kept in bed. There was gradual resolution of the density in the right lower lobe of the lung. By the end of the third week, the patient was expectorating only a little yellowish sputum, none on most days. Sputum specimens were negative for *Coccidioides immitis* on January 23, 1956, and the lungs were clear. The body weight was 152 pounds. The patient was discharged but therapy was continued for four months.

In the foregoing rather mild case of coccidioidomycosis, the recurrence of symptoms after they had abated during a period when relatively small doses of INH were given for a short time and the subsequent resolution of the disease when the dosage was increased, indicated that whether the lesion was small, extensive or disseminated, optimal therapy was 100 mg. of INH, three times a day, with B-complex and vitamin K as a supplement, given for at least a four-month period. Somewhat analogous to tuberculosis treatment, INH treatment of coccidioidomycosis requires long-term administration.

In all three of the cases here reported, the most striking feature was the return of appetite or increase in appetite associated with INH therapy. There was an average weight gain of four and one-half pounds per patient per month.

A short-term pharmacological appraisal was done to further evaluate the clinical observation of INH effect on appetite. Six persons without disease but known to be constantly underweight and lacking appetite, were given 100 mg. of INH three times a day after meals as in the reported cases of coccidioidomycosis. They previously had had high caloric diet plus supplemental vitamin therapy (thiamine or B-complex) without increase in weight or appetite. The subjects did not know the nature of the therapy or of its possible effects. An average weight gain of two pounds per patient per month occurred over a three-month period. Without prompting, the subjects readily mentioned increased appetite.

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ADDENDUM

Since this communication was written, three additional patients with early diagnosed pulmonary coccidioidomycosis of variable degree have been given INH combination therapy as discussed in the text and are responding and recovering satisfactorily.

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Normal Psychological Changes in Adolescence

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ADOLESCENCE is a final, lively stage in a child's growth to adulthood. The adolescent has a long history with his parents, school, his peers, and society, and their demands, values and mores. The sex drive, emancipation from parental authority, and the aggressive drive to achieve and dominate are the outstanding challenges which confront an adolescent, and the expression of these drives is conditioned by his previously established relationships and reactions. A previously well-knit personality is loosened up, as it were, under the impact of the profound biological changes and drives clamoring for satisfaction, and the prohibitions opposing the expression of such drives. Modes of behavior, previously satisfactory, often are not adequate to cope with the changes, and the resulting behavior may frighten teachers and parents.

Physicians have to keep in mind that the adolescents' turbulence, confusion and contradictions can often make them appear very sick and yet in most instances the behavior, if understood for what it is, may be quite normal. Adolescent disturbances can assume protean forms and they can be of devastating severity. Even psychiatrists whose work is largely with elementary and high school aged children often cannot easily distinguish between some types of adolescent turmoil and, for example, schizophrenia; and it is especially imperative that physicians avoid serious diagnostic mistakes in this highly vulnerable period. The capacity for change is vast; the clinical picture may change kaleidoscopically in a short time.

Physicians must also be cautious not to put too much reliance on projective tests like the Rorschach. These tests are valuable aids and they may reveal an impaired capacity to cope with internal stresses and reality demands as well as responses similar to those in schizophrenia. Even so, the individual may still emerge into integrated, responsible adulthood. In most cases the confusions, turbulences and contradictions pass. The physician who would be helpful to the educator and the parent must be cautious of his diagnosis, and understanding of the biological, psychological and social strains our society imposes on boys and girls whose immaturity is protected by the conventions of our culture. The physician must attempt to understand the meaning of the changes

• It behooves physicians to be aware that adolescents are different people, that they have a vast capacity for change, that they often exhibit the sickest kind of behavior, which may be very frightening to us and to them.

Physicians have to be able to wait and not become panicked by the turbulences, confusions, and contradictions that mark the adolescent's behavior; to keep in mind at all times that much of what is going on is relatively normal behavior in the drive toward maturation and adulthood; that the adolescent has to cope with his sexual drive which is continually frustrated, that he has to cope with the problems of emancipation from parental authority, that he has to cope with an aggressive drive to achieve and to dominate.

Parents, too, have to be understanding and ready to render unselfish support, for they continue to be the source of strength and security, and even the source of healthy restrictions. Adults must be aware that the adolescent struggles with his conscience and its dictates, and we should look upon cliques, groups and clubs as a healthy assistance in the preservation of standards, ethics, and mores.

of the adolescent period. Then he must not permit his understanding and clinical patience to be clouded by the pressures of a distraught parent or apprehensive educator, or by any other pressures.

Adolescence is a physical event. At the end of the adolescent period the body is mature, however childish the person living in it. All develop at their own individual rates, but the sequence of bodily growth is more or less the same for all adolescents everywhere in the world. However, the reactions toward the basic changes—that is, menstruation, body hair—are not all alike.

The society in which the adolescent lives has much to do with his adolescent change. Even some of the differences between adolescent boys and girls are due to the different treatment and attitudes toward them. In the primitive cultures, early responsibility and status are given to youths, whose puberty is appropriately and ceremoniously marked. Interestingly, adolescence in such cultures is usually a mild period. In our society, with its complexity, demands and codes, we postpone recognition of adolescents as adults, hinder their independence, frustrate a biologically sexually mature organism. One has only to read the newspapers to confirm that teen-agers are regarded as a special breed, as irresponsible,

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and with suspicion until proven innocent. Their bad deeds are played up and reflect on the whole age group; their good deeds are largely ignored. This helps make the period one of strain.

The great majority of the so-called problems of adolescence have to do with normal reactions and phases through which the adolescent passes in his growth to adulthood. The adolescents are trying to solve problems that have been present from their earliest years. From the earliest years they learn to withstand frustration, to do the right thing, to accept limits and controls. The methods previously learned are tested again and again in puberty. Earlier unsolved problems are re-presented for re-solution.

The adolescent feels driven to be independent. He has to make his own decisions, choose his own friends, determine his own future. There is a real, powerful drive for emancipation and independence which comes not only from the internal pressures but also from pressures of peers, society and parents. The prominent feature of the adolescent's push for emancipation is the devaluation and belittlement of his parents. It is a necessary, constant part of development toward independence and maturity, a normal phase. All areas in which parents are concerned in bringing up children are involved—ideals, actions, school plans, habits, thinking. Difficult for the parents, but necessary for the youth.

The belittlement and devaluation also may be part of a desire to repudiate the whole growing up process. Sloppiness may be a repudiation of painstaking training in cleanliness, but since girls do not like messiness, the lad shows his "hate" of girls in this way. Girls, too, may repudiate their feminine role by acting as tomboys, and, in extreme cases, may diet or refuse to eat to avoid developing a female shape.

If there are no issues, adolescents will make them to assert their independence and cause parental comment. "Back talk" may be merely holding their own. "Fresh talk" is often fresh, but it may present a fresh point of view. It is a jolt to adults to have a teen-ager question their wisdom—but it may be salutary. Yet, an adolescent really fears to give up his parents or to make wrong decisions, even if concealed by vast amounts of bluster and bragging.

With the physical changes, the adolescent soon becomes a biologically mature organism capable of sexual relations and producing children. Although physically mature, in most instances he is not considered psychologically or socially mature enough in our society to marry and start a family. Sexual frustration is imposed upon the biologically mature individual with a powerfully reinforced sexual drive. He cannot, sometimes even in fantasy, indulge his longing for sexual experimentation without in-

curing feelings of guilt and anxiety. The powerful reinforcement of the sexual drive, its seeking for satisfaction like other basic drives, and its achievement of heterosexuality are fundamental.

Attachments to parents and parents of the opposite sex must be freed so that the mature individual becomes free to choose and love his or her own mate. In the effort to free himself from the love objects of childhood, many new attachments take place. There are attachments to members of his own group and to an older person as a guide, and leader. There are many episodes of passionately falling in love and being exclusively with the loved one—but briefly, and the relations are abruptly broken off. Striking faithlessness, changeableness and abruptness are characteristics of these relationships. The adolescent's aim in these relationships is not so much to possess the male or female in mature, adult ways, but to assimilate himself as much as possible to the person at the moment important to him. This has an important psychological function because the rupture of former relationships is disturbing. The youth prevents withdrawing into himself and concentrating totally upon himself by the brief love relationships which make contact with those outside of himself.

More specifically, the sexuality of early adolescence reactivates the family triangle. In early childhood there is a normal phase when the child is strongly attached to the parent of the opposite sex and jealous of the parent of the same sex. Once again, the boy's mother looms important, and he makes every effort to deny her appeal. Clinically, we see this in his avoiding an affectionate relationship with his mother. He now refuses any of the previously accepted physical manifestations of affection. His mother must avoid all physical contact with him. She cannot kiss or hug him. Verbal expressions of affection are brushed aside and praise means treating him like a baby. He has to reassure himself that he is capable of independent action, free from the dictates of his mother. Suggestions are responded to with irritation. Feelings of inadequacy are exaggerated in the boy, and he defends himself by avoiding imitation of his father and particularly by tearing down the virtues of his parent. He belittles his father in thought, in action, and in words, regardless of the father's station in life or profession, thus establishing his own self-respect. Yet, there are alternate phases when he seeks his mother's responses flirtatiously and provocatively and accepts his father as an oracle and treats him as if he were the exceptional man or the man of the year.

The adolescent girl faces a more difficult adjustment. Her clearest definition of femininity is that

with which her mother has acquainted her, and which she has accepted as a model for herself. She vacillates between contempt and idealization for her mother and father, in various combinations and singly or together. It must be borne in mind, too, that our culture does not provide a milieu that is conducive to the fulfillment of the normal biological urges of women. As one authority remarked, too often a woman finds that biological fertility results in sterility in other aspects of her life. If the mother has not found rich and multiple gratification in her own femininity, identification with the mother inevitably creates a struggle for the maturing girl.

Mention should be made of the struggle with conscience that goes on during this period. Conscience results from the incorporation and internalizing of parental standards, dictates, and values. The youth rebels against his conscience, flaunts his new freedom, verbalizes his contempt for its demands, and acts out token proof that he is free of it. In seeking a symbol of his conscience against which to strike, he most frequently chooses his parents, who were the determinants of the original pattern for his conscience. The rebellion is frightening to him too, for the new, surging impulses are not readily checked. So, at one time he may be frighteningly free of inhibitions, and at other times, frightened, may deprive himself of all normal spontaneity by unrealistic, self-imposed prohibitions.

It is during this period of rebellion against conscience and standards that the influence of the peer group becomes apparent. The group and the youth's association with it are largely positive and constructive for his healthy development. Many parental standards are valued by the group. The average social group, wishing to be accepted in the social structure, does not give up the more important values that the parents imposed earlier upon each individual. The peer group gives him support, answers his questions. He can discuss his mixed feelings and find comfort in the similar suffering of others with whom he feels equal. The group softens the rebellion against conscience. The group works out concepts of morality, ethics, and social customs. If their past experiences have been generally satisfactory, the resulting group attitudes will not be strikingly different from parental standards, yet will be accepted readily by the youth. The group serves as a relative island of security in a confusing world.

Confusions abound in the adolescent period. Confusion, of itself, is not so harmful. It is unavoidable. There are many confusions for parents and adolescents. Take dating. If he does not date, his parents are concerned, and he may be pressured and teased. Basically, they indicate to the lad that he can be and should be more tolerant of his natural impulses

toward the opposite sex. He finally dates. Parents become alarmed and question, "Why are you staying out so late?" "Why aren't you studying?" "Do you know the risks involved with girls?" Basically, now they indicate to the youth the dangers of giving in to his own impulses.

The lad is reminded by his parents that he is growing up, urged to assume responsibility, to think for himself, to be less dependent on them for guidance. What happens when he finally attains more independence? He is reminded they are his parents, that he is too young to know what is best for him, that they have a right to control him until he is of age. Independence does not mean the adolescent should take more initiative in doing what his parents wish him to do. Nor are parents' wishes always clear. They expect him to be grown up in the sense of possessing all the virtues parents value and not to have any of the vices that adults tolerate in one another.

Parents are often frightened by their child's maturing. Most hope their child will be a better and happier adult. They sense his confusion and are frightened by it. They sense the effect of his biological urges and that he does not have the defenses to cope with them. Looking back upon their own adolescence, they often feel they were saved by some miracle but fear their son may not be. Many consciously want their child to grow up and unconsciously hinder this. They may not wish to face the vacuum when the child is no longer dependent upon them, or may be jealous of his entering adulthood while theirs is relatively declining. Or they may fear competition from their adolescent, or fear his failure, or are so tied up with their child they cannot give him or her up.

Confusion is heightened by the fact that in our culture one has the right to develop as an individual so long as other individuals are not jeopardized. The social confusion makes the adolescent seek answers outside himself in his family group and outside world. The rules of living he gets are not without contradiction. There are no rigid prescriptions or guides. Adolescent behavior is unpredictable because it is determined by the confusion in him. Unlike the primitives, he is not protected by rituals and laws which confine and define "growing up." He is told to and is expected to "grow up." He is not told how to grow up.

Confusion is increased by half-truths learned during childhood, whether sexual, ethical or moral. Concepts of democracy, of equality between the sexes, of sexual freedom and of freedom to choose social groups are tested by reality, and the ideal is found not practicable or possible or feasible.

Variations in growth and development add to the

confusions. We tend to rely heavily on statistical norms and criteria, so that a child may be considered maladjusted because he matures early and behaves differently. The child who matures late may be in a setting appropriate for the more mature, and he, too, would be considered maladjusted. Adolescence is not a chronological period nor does identical age mean identical maturation. Variations in growth create problems because our cultural program is standardized and for the adolescent, relationship to his own chronological group may be difficult. Adults may frown on him, he may not get support from his peers, and an unpleasant, troubling vacuum may result.

Contradictions mark the behavior of the adolescent. They have a real meaning and result from an attempt to find clean-cut answers to internal stress and drives and to problems the real world imposes upon him. The biological changes evident in the bodily changes are important in stimulating this behavior. Pressure toward maturation increases. Aggressive energy with which to strike out more effectively against controlling forces that strive to prevent gratification of impulses also increases. The sexual drive which is maturing is clamoring more urgently for sexual fulfillment. The painfully acquired psychological balance is shaken by the impact of these changes.

To illustrate: The adolescent struggles for independence, protests that he does not want to be told what to do, and at the same time he is not quite able to handle his independent activities as adequately as he did in the immediate past. His sometimes impulsive behavior, his confusions about what he wants, his goals, disturb him and not just adults. He is likely to want—at the same time that he protests—advice about clothes, hours to keep, food to eat, ethical and moral formulas to embrace. The contradictions are based on the normal struggle between independence and dependence.

He may be so absorbed with girls that he neglects all other work and duties. Then, suddenly, all interest in girls seems to stop; they do not exist or they are no good. All activities are with boys, whether just "bull sessions" or loafing or athletics. Parents may relax when Ken seems very devoted to a desirable girl. But the devotion is short-lived. Suddenly, Ken loses all interest in this girl and seems very devoted to a girl who is undesirable according to family standards. The desirable girl is cast off as "too nice." Yet, when he abandons the "not nice" girl it will be because she is "not nice."

His personal relationships are a study indeed. Any similarity between ideals expressed and behavior is purely coincidental. He may hate or love with ferocious intensity, often far out of proportion to any

observable rational cause for either. Teasing about his haircut might set off a blast, yet he might readily forgive the lad who dates his girl friend. He may accept severe, unjustified reprimands and yet rage if asked to turn in cleaner homework.

No matter what the behavior of adolescents, parents must realize that the parents are a source of protection and security. And, as the youth becomes more mature, he turns less and less to parents or substitutes as he masters more and more of his problems.

Physicians all too often are confronted with somatic abnormalities that can conceal psychological phenomena. Some of the common clinical pictures of this kind are:

Adolescence as a Physical Event. The beginning and end of adolescence cannot easily be marked off, but the age range is from nine to seventeen years. Usually, however, it begins at 13 or 14 years of age in boys and about a year earlier in girls. Growth is different for every boy and girl. Pronounced changes occur in the internal make-up, and with the body changes the adolescent has a new physical self. Sexual maturity and the appearance of the physical changes that make the girl as a woman, and the boy as a man, change their status in their own eyes and in the eyes of others. There are changes in body proportions, widening of hips and growth of breasts of the girl, growth of pubic hair, hair in armpits, fuzzy hair on face and body, lowering of voice of the boy, the increased growth of the genital organs, and, of course, the maturing of the sex glands which in the girls is marked by menstruation and in the boy, by the presence of sperm. The age menstruation begins varies widely but most girls begin at about 13 years of age and it is a rare girl who has not menstruated by the time she is 16. Late menstruation need not be abnormal. Nor does menstruation necessarily mean the girl is sexually mature, for that is measured by the presence of ovulation. Eggs are not usually produced in the first year of menstruation, and that is why pregnancy is rare at that period.

All the changes can be quite bewildering. The many parts of the body do not develop at the same pace. The legs grow slowly in early childhood and very fast in adolescence. The organs have their own timing, and all this makes it hard to say how old a child is, physically. Girls and boys have different timing in their physical growth. The rate increases sharply until 18 to 20 years in girls and 20 to 22 in boys. From birth on, girls are ahead of boys in development—1 to 3 years ahead at age 12. It is very confusing for a girl—and her parents—to suddenly find that she is taller than boys in her class. Between ages 11 and 14, girls may become taller than boys for the only time in their lives. By age 15, boys have

overtaken them. The twelfth year for girls and the fourteenth year for boys are the years where the greatest gain in height is made too. Even in weight, girls outweigh boys for a time, from 12 to 15 years. Part of the weight gain comes from muscle growth and boys double their strength between 12 and 16 years. Sweat glands (and those supplying oil to the skin and hair) become more active. Incidentally, children tall between 6 and 10 years of age are usually tall at maturity.

Parents' attitudes about physical health are important. The examples they set in their own habits of caring for themselves and thinking about their health influence their children. Healthy attitudes and habits in parents about health are likely to be passed on to their children. On the other hand, parents who worry too much about their child's health may make illness a pleasant way to dodge unpleasant or uncomfortable situations like school, examinations, or formal social events. All too often people employ trumped-up methods to escape difficulties, and illness can be one way of escape and refuge. Young people should be taught to think of themselves as healthy, and one ought not to encourage in them that the trouble—whatever it may be—is physical. "What you need is a tonic" (or vitamins, or a cathartic, or to stay in bed), is all too often heard. This does not mean that one does not take care of physical ailments when suspected to be present, but one should avoid blaming all troubles on "It's probably your health."

Parents who worry too much about their boys participating in sports, about broken bones, strained backs, damaged hearts, make it very difficult for boys. There are a lot of false notions about sports damaging the heart of the adolescent. Actually, if a teen-ager is thoroughly examined physically and found to be in good health, most sports are safe for him and need cause no worry about heart strain. Thorough physical examination is emphasized because so many boys have been made psychological cripples and so many parents nervous wrecks because "a heart murmur" was diagnosed. Some heart murmurs are completely unimportant, and if that is the situation in a given case an expert will so inform the parents and will tell them also that the child's activities need not be limited. If there is any heart impairment, the physician should decide how much protection the child may need. Murmurs scare parents and children, and it is important that the facts be thoroughly known by the parents from experts—not from neighbors or "sidewalk professors." To overprotect is as harmful as avoiding all care.

Overweight Adolescent. The really fat adolescent is usually very self-conscious about it. The key lies

in the discovery of why a boy or girl has to fall back on eating as a solution to problems and a way of getting satisfaction. His hunger may be for being loved and admired, for feeling successful and happy. Many fat children are simply going through a stage of their development that does not last long—but parents need the physician's support to keep them from being anxious and passing on their worry to the child.

Sleep. The adolescent's sleep is important and he should have a chance for all the rest and sleep he will take. It is exasperating to parents to find their teen-agers full of energy for the things they want to do and, oh, so tired when asked to do something they really do not want to do. It usually has to do with the fact that adolescents have spurts of energy and then periods of flopping about. They are likely to do what they do so hard that they really have periods of exhaustion, and the things they like to do, they will do hard. Fatigue is forgotten when something exciting is going on, and only really felt later. This certainly does not mean that reasonable, required family duties are thrown overboard.

Acne. Acne is a troublesome condition in adolescence, coming at a time when boys and girls want to look attractive and are anxious about their looks. Many a youth avoids dating or group activities because he or she is miserably self-conscious about the pimples on face or neck. Sometimes they feel the acne is punishment for sexual practices like masturbation or indulgences like necking or petting. Of course, this is absolutely untrue. Inflamed pimples and blackheads come about because of the clogging of the oil ducts that carry oil to the skin. The treatment of acne certainly should be guided by a physician, who can discourage the various home remedies and prevent the harm often resulting. He can explain just what acne is, and his reassurance will guide the parents and the youth.

The "Hypochondriac." Parents often become impatient with a barrage of complaints from their teen-ager about this or that ache or ailment and, in exasperation, call him (or her) a "hypochondriac." While it is true that at times, when the youth's diet has not been proper, there may be a mild sort of malnutrition behind "not feeling well," most instances are not due to any illness. However, the physical discomforts are there. We have all had the experience of having some physical symptom when we were upset and anxious.

In some adolescents, the discomforts are really the same that have always been present except that the youth reacts to them at this time with greater sensitivity than in the past. During early childhood, one becomes familiar with and learns to ignore many

physical sensations to which one has responded earlier in infancy. During adolescence the keen awareness of body sensation returns.

At times, the "hypochondriac" may really be showing anxiousness about the physical changes occurring in him. For example, many girls complain about abdominal pain a few months before the onset of menstruation. They may be cranky, cross and irritable. Why the pain is present is not clear, but they are concerned and complain and fuss about it. Frank discussion about menstruation does not help relieve their anxiety. Another example: Some boys have a temporary breast development which makes them afraid they are going to be effeminate, and they show their worry in terms of physical symptoms. Many adolescents are anxious and uneasy about the various physiological and psychological adjustments being made, and this may be expressed in physical symptoms which certainly are easier to understand—and face—than the inner uneasiness.

The Awkward Youth. This is a myth. We have only to remember the young athletic champions to doubt that awkwardness is a necessary part of adolescence. Boys and girls do not fall over their own feet because they are growing up too fast. When they are doing something they are not self-conscious about there is no trouble about coordination or muscles working together. The awkwardness one may see is not due to anything physical but rather a social awkwardness, an awareness of the new self and being quite self-conscious about it.

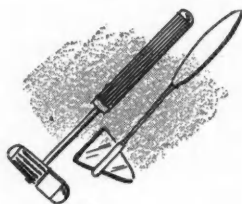
Self-consciousness about the body and its changes may cause slouching or stooping. A girl may be ashamed of her height, or her pride in her breast development may be interfered with by mixed-up feelings about sex, and she may try to hide in poor

posture. Some boys too, worried about chest development they may consider feminine, will walk stooped and hunched over.

"Late Adolescence." It is the rare boy who does not mature physically even though late. It is not pleasant for a boy to be the smallest one in the class or not ready to do what others of his age do. Parents sometimes become very concerned and believe that hormones should be given to speed up the maturing of the lad, that his genitals should be larger or that he should be taller and more manly looking. Boys, too, become very concerned about the slow maturing or the size of their sex organs. Treatment with hormonal preparations is usually unnecessary and even harmful and mostly caters to parents' anxiety. The end result in most lads is the same without such treatment. On the other hand, there are special cases where use of hormonal injections might be advisable, but they are special cases and the decision should always be up to the physician, who will not be pushed beyond his better judgment by parents' concern.

There are no hormone preparations to reduce the height of a child and it does become a problem—especially for girls—to tower over others in the class. Sally was almost six feet tall when she was ten years old and felt very conspicuous, to the point where until her late teens she avoided walking through a group because she was sure they were talking about her. Girls who tower over boys do feel very conspicuous and complain bitterly about the real difficulty of dating. The attitudes parents have about their children, tall or small, have a lot to do with whether the children carry throughout life problems about their height.

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Workmen's Compensation

Emphasis on Rehabilitation

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AT ITS MEETING in Boston last November, the House of Delegates of the American Medical Association adopted a report entitled "Medical Relations in Workmen's Compensation" which was prepared at its request by the Council on Industrial Health and approved by the Board of Trustees. The report pointed out the need for a critical appraisal of medicine's past record of performance in this important sphere of medical service and provided a guide for the evaluation and implementation of a progressive workmen's compensation program by the medical profession. Some of the highlights of this report follow:

Historically, workmen's compensation laws were adopted to meet certain needs of employees and their survivors resulting from work-connected injury or death and to remedy inadequacies stemming from common law and employers' liability statutes. The provision of cash payments to replace a portion of lost wages was of primary concern. Little or no consideration was given to the provision of medical care. Ever since the first law was enacted in 1911, the major emphasis has been on monetary satisfaction of liability with insufficient attention to rehabilitation of the occupationally disabled.

Although substantial progress has been made in the extension and improvement of medical care and other aspects of the rehabilitation process, it is a matter of great and growing concern that a considerable gap exists between potential services to the occupationally disabled and what is actually provided.

Many physicians have been deterred from active participation in workmen's compensation affairs. They are largely unaware of the significance of medical and economic policies under these laws and the undesirable and often harmful effects of existing systems. Whatever the causes, this attitude has been unwise because not only workmen's compensation laws but other similar laws in related fields of social security have been formulated largely without medical consultation or any clear identification of medi-

• Since the first law was enacted in 1911 major emphasis has been placed on monetary satisfaction of liability with insufficient attention to rehabilitation of the occupationally disabled.

An effective workmen's compensation program must have three basic goals: (1) Rehabilitation of the occupationally disabled; (2) assured, prompt, and adequate indemnity for the occupationally disabled or their survivors; and (3) minimal costs to employers and society commensurate with the first two goals. It is suggested that the medical societies of each state provide a broadly representative committee to advise the administrative agency on medical policies and practices. This committee would prepare registers of all physicians in each locality who are willing and qualified to accept calls for service to injured employees, would mediate complaints originating with the employee, the employer, the insurance carrier or the administrative agency, and would cooperate with the administrative agency in educational programs for all concerned.

It is the physician's responsibility to help the administrative agency in shifting the emphasis from indemnity to rehabilitation. The disabled employee is entitled to all services available to restore him to an earning capacity.

cine's primary interest. The predominance which economic considerations have come to occupy in both professional and administrative aspects of workmen's compensation is a natural consequence. These same considerations have led to a concentration of professional services and responsibility in a few and not always the best hands.

An effective workmen's compensation program must have three basic goals:

1. Rehabilitation of the occupationally disabled;
2. Assured, prompt, and adequate indemnity for the occupationally disabled or their survivors; and
3. Minimal costs to employers and society commensurate with the first two goals.

The modern concept of rehabilitation implies the effective use of all disciplines and skills dedicated to the conquest of disability. Workable rehabilitation programs require specific statutory provision; planned and improved cooperation from the medical profession; and intelligent, forceful administrative supervision.

Chairman, Council on Industrial Health, American Medical Association.

Guest Speaker's Address: Presented before a Joint Meeting of the Sections on Industrial Medicine and Surgery, and Orthopedics, at the 85th Annual Session of the California Medical Association, Los Angeles, April 29 to May 2, 1956.

Medical Implementation of Proper Rehabilitation

To implement a proper rehabilitation program, the medical profession should seek adoption of statutory provisions which recognize that:

1. Rehabilitation of the occupationally disabled is the intent and responsibility of the compensation system and the legal right of the employee.

2. The disabled employee is entitled to all services, appliances and supplies required by the nature of his disability or the process of his recovery and that will promote his restoration to or his continuance in employment. Services, appliances and supplies are spelled out in some detail in the report adopted by the A.M.A. and are to be paid for by the employer under the supervision of competent professionals responsible to the administrative agency. In the absence of stipulated agreements, professional fees should approximate those that would be charged the employee as a private patient for similar services.

3. The disabled employee has the right to accept physicians' services provided by the employer, or to select another physician from a register of all other physicians in the community willing and qualified to perform the essential services. This aspect of workmen's compensation was further emphasized by a resolution passed by the House of Delegates last November recommending "that the appropriate official medical organizations in each workmen's compensation jurisdiction examine and, where necessary, seek adoption of statutory provisions to the end that all patients subject to workmen's compensation laws have the right to accept physicians' services provided by employers or to select another attending physician from a register of all other physicians in the community willing and qualified to perform the essential services."

Suggested Responsibilities of the Medical Profession

Although the administrative agency has the ultimate responsibility by law, a successful medical program depends on improved and planned cooperation from the medical profession. The report suggests that the medical profession can best fulfill its responsibilities by providing a broadly representative committee to advise the administrative agency on medical policies and practices. Among the activities of this committee should be:

1. The preparation at suitable intervals of registers by communities of all physicians in the state who are willing and qualified to accept calls for services to injured employees. Regulations governing enrollment on these registers should be established by the administrative agency after consultation with the advisory medical committee.

2. The mediation of complaints regarding: Neglect or refusal by physicians to furnish reasonably

necessary reports; unreasonable administrative interference with matters properly within the discretion and control of the attending physician; differences relative to remuneration for professional services; unethical conduct in care, treatment, and examination of injured employees and reports and oral testimony; and the competence of those serving on physicians' registers. The advisory medical committee should recommend the removal of any name from a register, if complaints are justified.

3. Cooperation with the administrative agency in educational programs for all concerned on clinical and administrative problems and the development of proper medical report forms, desirable legislation to improve the workmen's compensation system and its administration, and the preparation of handbooks for physicians.

Suggested Responsibilities of the Individual Physician

In describing the role of the individual physician, the report points out that his primary obligation is to see that his patient is restored as nearly as possible to the economic and personal effectiveness which he possessed before he was injured. This requires not only competent and impartial medical care but also that the physician use or recommend the use of other technical skills and resources available, whether in the community or not. Other obligations inherent in medical services to the occupationally disabled are:

1. To furnish promptly, and to the same extent, concise accurate information and reports descriptive of the disability to the patient or his dependents, to the employer, to the workmen's compensation carrier, and to the administrative agency.

2. To testify before the administrative agency upon reasonable notice. The physician's testimony must adhere to reasonable scientific deductions regarding the injury, disease or possible sequelae to the end that every deserving claim receives just consideration.

3. To request consultation in case of serious illness, especially in doubtful or difficult conditions, and to agree to consultation with mutually acceptable physicians when requested by one of the interested parties.

4. To determine by scientific methods and upon the basis of objective measurable factors the permanent anatomic or functional impairment of a specific member or of his patient as a whole as compared with normal. From the medical standpoint, permanent anatomic or functional impairments cannot vary because of geographic locations or circumstances in which they were incurred. Therefore, the physicians should determine the percentage of permanent impairment without regard to age, sex,

occupation or real, presumed or potential wage loss. The application of these and all other factors provided by law to the percentage of permanent impairment established by the physician is the responsibility of the administrative agency in determining the indemnity award. In general, physicians are no more qualified by experience or training to evaluate such nonmedical factors than any other disinterested individual.

Suggested Responsibilities of the Administrative Agency

The report recognizes that rehabilitation of the occupationally disabled requires a competent administrative agency with full statutory authority and responsibility. The agency must have more than adjudication and appeals functions; it must have an affirmative duty to see that the intent of the law is carried out. It may delegate functions, but it cannot abdicate responsibility. Proper discharge of this trust requires adequate resources in terms of qualified, permanent, professional personnel and proper facilities.

In addition to an advisory medical committee, the administrative agency should have a medical director, approved by the medical profession, and a qualified vocational counselor. As staff officers, they should be in charge of the administration of appropriate provisions related to the rehabilitation of the occupationally disabled and should participate in such policy-making deliberations of the agency. They should have the full support of their superiors and constantly strive to provide leadership and promote effective professional relations in their fields through the maintenance of approved professional standards and practices.

Indemnification versus Rehabilitation

In discussing indemnity—a matter too often considered no business of the physician—the report points out that the amount and method of indemnification have a direct and important bearing on an effective rehabilitation regimen. While over-generous indemnity can dull the will for rehabilitation, inadequate indemnity requirements can destroy an employer's incentive to support rehabilitation by providing him with an easier or cheaper alternative.

More important, inadequate indemnity can lower patient morale or force return to gainful employment in advance of clear-cut medical indications.

In view of these relationships, it is consistent for the medical profession to support methods of indemnification which contribute to, rather than obstruct, rehabilitation procedures. Certain factors merit consideration:

1. Inadequate cash indemnity encourages "lump-summing" of payments, which tends to interfere with rehabilitation motivations. The practice should, therefore, be limited to instances where dependable evidence supports the contention that such a payment would contribute to the over-all rehabilitation of the employee.

2. Workmen's compensation is not a relief program. It is the proper intent of the program that a disabled employee and his family should not suffer a serious reduction in normal living standards during the rehabilitation period. This requires that the benefit level be maintained at an adequate percentage of usual wage and include reasonable personal expenses incurred by the employee in the course of the rehabilitation process.

3. Physicians interested in a rehabilitation program acceptable to permanently disabled employees recognize that attempts to relate indemnity payments solely to loss of earnings is impractical and unscientific. While it is not the purpose of workmen's compensation to indemnify all individual consequences of a disability, such as pain, suffering and humiliation, the employee's right to personal effectiveness is not confined to employment or to a limited period. Personal motivation to maximum rehabilitation can be hindered by complete deprivation of indemnity for permanent disability, whether it be a member or an organ of the body. Therefore, indemnity for permanent disability should be related to the employee's permanent impairment of earning capacity—in effect the anatomic and functional handicap incurred in working for a given employer. Maximum rehabilitation should be based upon the effect of such a handicap on the earning capacity of the average employee so as not to penalize a disabled employee for exercising individual initiative.

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Carcinoma of the Nasopharynx

Treatment with Radioactive Cobalt

WAYNE W. DEATSCH, M.D., San Francisco

THE PURPOSES of this paper are to discuss briefly the clinical characteristics of carcinoma of the nasopharynx noted in 80 patients, to describe a technique of treatment with intracavitary radioactive cobalt, and to comment on the results of this treatment in 22 of the patients from 1949 to 1954. The patients were observed at the University of California Hospital and were treated by or under the direction of L. F. Morrison, M.D., of the Department of Otolaryngology and B. V. A. Low Beer, M.D., and R. S. Stone, M.D., of the Department of Radiology.

In an effort to add to the current method of treatment with external x-ray irradiation, when the use of radioactive cobalt was developed for intracavitary irradiation⁸ its use in treating carcinoma of the nasopharynx was begun in 1949. Of course, intracavitary irradiation with radium applicators had been used previously, with good results reported by some investigators^{4,6,9} and indifferent results by others.^{5,10}

CLINICAL CHARACTERISTICS

Carcinoma of the nasopharynx is not a common disease, comprising only 0.3 per cent to 0.4 per cent of all malignant lesions^{4,7} and only 2 per cent of all malignant growth of the head and neck.⁶ There was record of only 97 cases at the University of California Hospital since 1932, where it represented 0.7 per cent of all cases of malignant disease.

Although it is not the most frequent, it is one of the most malignant growths of the upper respiratory and alimentary tracts. Reports of five-year survival rates in various series range from almost zero³ to around 20 to 25 per cent.^{1,4,5,6,10}

Carcinoma of the nasopharynx is an insidious disease and is often unrecognized until metastasis causes symptoms. The primary tumor in the nasopharynx causes relatively few symptoms in its early stages and must attain considerable size before causing local symptoms such as nasal obstruction, increased nasal discharge or a "plugged" ear. Persistent unilateral serous otitis media in an adult should be considered as being pathognomonic of a neoplasm of the nasopharynx until proved other-

• A method of treatment of carcinoma of the nasopharynx is described, using a bead of radioactive cobalt in a Foley catheter placed through the nose and inside the nasopharynx. As an aid in proper placement of the cobalt bead a portion of the nasal septum is removed first. This method of treatment is to supplement rather than replace other methods of treatment such as external x-ray therapy and surgical excision of lymph nodes in the neck.

Twenty-two patients were treated with radioactive cobalt beads and the results indicated that it is a useful method for treating carcinoma in the nasopharynx.

wise. Since these tumors are usually anaplastic and tend to metastasize early, it is the metastatic lesion that usually causes the first symptoms.^{4,6}

In 47 per cent of the patients in the present series the initial symptoms were referable to metastatic lesions, and 73 per cent of the patients had metastasis at the time of first examination.

The most frequent initial symptoms were enlarged cervical nodes (37 per cent), and nasal obstruction or bloody nasal discharge (35 per cent). Unilateral deafness, pain in the ear, or "plugged" ear was the first symptom in 10 per cent of cases, and in another 10 per cent it was intracranial extension with cranial nerve involvement as evidenced by facial pain or unilateral cranial nerve paralysis. In 8 per cent there was no record of the initial symptoms.

This disease occurred more frequently in males (74 per cent) than females (26 per cent) and occurred predominantly in the middle age group—71 per cent between 30 and 59 years. The highest incidence in any decade was 28 per cent in the 50 to 59 year group. The youngest patient was two years and the oldest 77 years of age.

These data agree generally with other reports as to age and sex incidence and presenting symptoms and metastasis.^{4,6,7} Many investigators have noted the racial susceptibility of the Chinese to this disease; Digby and Khoo² reported the incidence to be 5 per cent of all cancer in China. With a large Chinese population in San Francisco, it is not unexpected that 27 per cent of the patients in the present series were Chinese.

Presented before the Section on Ear, Nose and Throat at the 85th Annual Session of the California Medical Association, Los Angeles, April 29-May 2, 1956.

In the treatment of patients in the present series, radioactive cobalt was used in the form of a bead contained inside a Foley catheter for ease of handling and positioning. The preparation of this bead and its activation and characteristics are fully described elsewhere.⁸ Briefly it can be stated that radioactive cobalt (Co^{60}) in the form of a bead offers a relatively inexpensive point source of gamma irradiation that is monochromatic, almost homogeneous, and has a mean energy of 1.2 million volts. The cobalt, before activation in a neutron reactor, is readily available and can be fabricated into any desired form.

With the patient under general endotracheal anesthesia, a posterior septectomy from the level of the middle turbinate to the floor of the nose is done, leaving a 1-inch portion of the septum at the columella. This provides greatly improved access to and visibility of the nasopharynx both for manipulation and positioning of the cobalt bead and for inspection and examination of the nasopharynx following treatment during the follow-up period. Bleeding at the time of septectomy is controlled with electrocoagulation and packing. The visible tumor in the nasopharynx is thoroughly cauterized at the same time.

The Foley catheter containing the cobalt bead in the center of the inflatable bag is then positioned in the nasopharynx through the nose and the bag inflated. The catheter can be firmly held in place with packing if necessary and the position of the bead checked by x-ray visualization. Placing the bead in the catheter with the inflated bag maintains the bead at a uniform distance from the surface of the nasopharynx and prevents local areas of overirradiation. The bead is left in position for the time calculated to give the desired dosage (usually 2,000 to 6,000 gamma r) and is easily removed after the catheter is deflated. The nasal packing is usually removed on the second to fourth day. (Postoperative bleeding has not been a problem.)

The patients are then given full courses of external x-ray therapy to the nasopharynx and also to cervical fields if there are palpable nodes in the neck. The radioactive cobalt therapy in this series did not replace, but rather supplemented, external x-ray irradiation.

RESULTS

Twenty-two patients with carcinoma of the nasopharynx were treated with radioactive cobalt in the five years from July 1949 to November 1954. Of these, 14 received initial treatment and eight were treated for recurrence of previously treated tumors. Of the 22 patients, 10 are living and 12 have died.

In three of the 14 patients treated initially with cobalt, the tumor was localized in the nasopharynx

TABLE 1.—Data* on Patients with Carcinoma of the Nasopharynx Treated with Radiocobalt (as Supplement to X-ray Irradiation)

	No. Patients	Living	Died
Initial treatment:			
Total	14	8 (57%)	6 (43%)
Localized lesion	3	3	0
With metastasis	11	5	6
Treatment of recurrence:			
Total	8	2 (25%)	6 (75%)
Localized lesion	1	1	0
With metastasis	7	1	6
Overall	22	10 (45%)	12 (55%)

* The period of follow-up observations varied. In only seven cases was treatment started five years ago or more.

TABLE 2.—Data* on Patients with Carcinoma of the Nasopharynx Treated without Radiocobalt

	No. Patients	Living	Died
Initial treatment:			
Total	53	19 (35%)	34 (64%)
Localized lesion	15	9 (60%)	6 (40%)
With metastasis	38	10 (26%)	28 (74%)
Treatment of recurrence:			
Total	5	1 (20%)	4 (80%)
Localized lesion	1	1	0
With metastasis	4	0	4
Overall	58	20 (35%)	38 (65%)

* The period of follow-up observation varied.

at the time treatment was begun; in the other 11 cases metastasis had already occurred. The three with localized disease are all living, and of the 11 who had metastasis five are living and six have died.

Of the eight patients treated for recurrent tumor, only one had disease localized to the nasopharynx, and he is still living after three years. Of the seven who had metastasis, one is living and six have died.

In the series of 22 patients, the four who did not have metastasis at the time cobalt therapy was begun are still living. Of the 18 others, six are living.

In only seven of the patients was treatment begun as long as five years ago. Three of the seven are still living.

Fifty-eight patients with carcinoma of the nasopharynx were treated by other means, consisting almost entirely of external x-ray irradiation. Of these, 38 have died and 20 are living, 13 of them five years or longer. Five were treated for recurrent tumor. One of them did not have metastasis and survived for over 15 years. Four had metastasis and none are alive. Fifty-three patients received initial treatment and 19 are living. Of 15 who had only a local tumor at the time treatment was started, nine are living; of 38 who had metastasis, ten are living.

DISCUSSION

The results obtained with radioactive cobalt therapy, although neither numerous enough to be

statistically significant nor old enough to supply data as to five-year survival, are interesting from several points of view. All the patients treated with local lesions are still alive, two as long as five years. This suggests that the addition of the radioactive cobalt therapy to the external x-ray irradiation may be of greatest value in providing better control of the primary lesion.

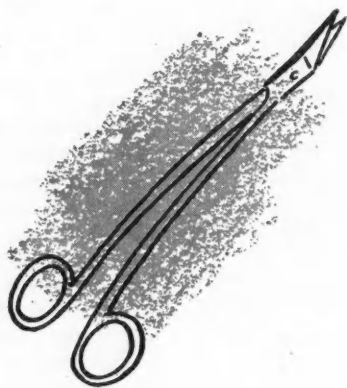
Eight of the patients treated for recurrence of tumor had already received full courses of x-ray therapy and were not candidates for further x-ray irradiation. A 25 per cent salvage in these patients is worthwhile.

It is also interesting to note that, although naturally the best results are obtained by any treatment when the tumor is localized, a smaller but substantial proportion of patients with metastatic tumor in cervical nodes or with evidence of erosion of the base of the skull were treated with some success. From this it can be concluded that patients with metastasis should not necessarily be given palliative therapy only, but should be treated with intense irradiation.

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Recurrent Pilonidal Cyst and Sinus

A Plan of Preoperative Preparation, Operation and Postoperative Care

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THE VARIED surgical techniques proposed for the eradication of pilonidal cysts or sinuses are evidence of the lack of a completely satisfactory method of management of this surgical problem.

Most of the procedures have some merit and are based on seemingly sound surgical principles, but regardless of the methods employed, there is recurrence in a significant proportion of cases.

It is proposed here to present a plan of preoperative management, a not entirely new, but modified surgical technique, and rules of preoperative and postoperative care which have given excellent results, not only in primary, uncomplicated pilonidal cyst, but most especially in the chronic, recurrent and persistent cases.

For the purpose of evaluating the procedure herein described, a review was made, after a follow-up period of ten years or longer, of a series of 50 consecutive cases of pilonidal cyst and sinus in which this plan of preparation, operation and care was applied. These were chronic, persistent or recurrent cases. The patients had undergone, previously, from one to five operations for the condition, including incision and drainage, and various methods of excision. Figure 1 is typical of chronic, recurrent cases in which multiple sinuses have developed. At times, one of the sinuses may be located far laterally, necessitating a "T" type of excision.

In the series of 50 patients here reported upon, the duration of symptoms varied from ten days to six years. Healing was achieved in all but one in which overlapping of the approximated skin margins resulted in delayed healing in the lower half of the wound. There were no complications or sequelae except for annoying ingrowing hairs at the suture line in one patient. Since only 33 of the 50 patients could be located for accurate follow-up, these only were included in calculating recurrence rate. There were three recurrences or 9 per cent. The 33 patients were followed for a period of 10 years or longer.

Of prime consideration is the fact that in recurrent pilonidal cyst or sinus, the field dealt with is infected or potentially infected. In fact, many of the patients are seen in a state of acute exacerbation of

• Evaluation ten years following radical excision and primary closure of recurrent pilonidal cysts led to the conclusion that the method of preoperative and postoperative care and the surgical technique employed gave satisfactory results. In 50 patients operated upon, the duration of symptoms varied from ten days to six years. Primary healing was achieved in all but one case in which there was slight skin overlapping. Thirty-three of the 50 patients were located for appraisal at the end of ten years. Three had had recurrences.

The procedure involved eradication of acute infection preoperatively, wide, en bloc radical excision, with primary closure reattaching flaps centrally to the presacral fascia, and drainage of the depths of the wound.

infection, frequently with abscess formation. Others have draining sinuses, which may be single or multiple and fairly widely scattered in the sacrococcygeal region; and often there are areas of chronic inflammation and/or acute cellulitis.

If there is an acute abscess, it is opened by an incision just large enough for complete evacuation and subsequent drainage. All patients are instructed to take sitz baths for a half hour three to four times a day for several days before operation. Chemotherapy is started and continued throughout the preoperative, operative and postoperative period; usually it is discontinued after the fourth to seventh postoperative day. In the period covered by the present

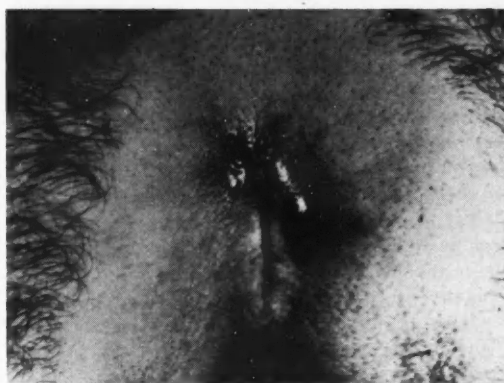


Figure 1.—Typical chronic recurrent case in which multiple sinuses have developed.

Submitted May 10, 1956.



Figure 2.—Patient in operative position with adhesive traction straps in place.

study, the following plan was carried out: 30,000 units of penicillin was given intramuscularly every three hours, and sulfadiazine orally, 4 gm. daily, in divided doses. (At present, however, sulfadiazine is omitted and penicillin is given in a single daily injection of 300,000 units.)

Usually within a few days all acute cellulitis and active inflammation subsides and drainage from the sinuses decreases to a minimum. When the signs of inflammation in the surrounding tissues have disappeared and only slight irritation at the mouth of the sinus opening is present, and when the patients have been afebrile for several days, the lower back, sacral, gluteal, and perineal regions are carefully shaved and cleansed with green soap or Phisoderm.[®]

OPERATIVE TECHNIQUE

A low spinal anesthetic is given and the patient is placed in a prone position on the table, which can be broken at the pelvis, and a pillow is placed beneath the hips to elevate the gluteal region. Wide adhesive straps with tie-down ends are then applied, over tincture of benzoin, along the posterolateral aspect of both buttocks, leaving free an operative field extending on both sides to the junction of the middle and outer third of each buttock. The traction straps, which must be applied with equal tension on both sides, are of great importance, for they flatten the gluteal contours, making the dissection technically less difficult and allowing a more precise delineation of the area of excision (Figure 2). The operative field is prepared from the midlumbar region to the upper third of the thighs posteriorly. The anus is carefully isolated from the field by means of a folded sterile towel and skin clips.

The extent of the incision is next outlined, to allow for a wide block excision through normal healthy

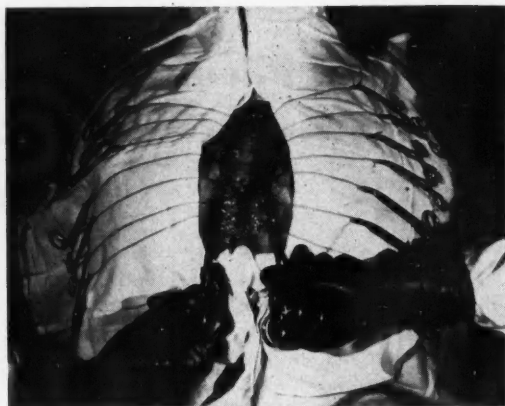


Figure 3.—Chromic catgut sutures in place. When tied they approximate soft tissues to the presacral fascia in the midline.

tissue, staying clear of all scarred or previously involved tissues in the central area. The incision begins at the junction of the middle and upper third of the sacrum and extends well down to the tip of the coccyx below, so that only a small margin of normal skin remains between the lower limits of the operative incision and the perianal skin.

A large percentage of the pilonidal cysts occur in the lower coccygeal region, but they also may extend higher over the sacrum or may be displaced laterally, especially in recurrent cases. Therefore, in order to be sure of including all secondary cysts or scattered sinuses, incision must be carried down through normal tissue, which can only be done by wide excision. The depth of the incision is down to the presacral fascia which is identified readily by its white, shiny, tough fascial surface. In extending the incision downward, one should maintain traction by elevating, with the aid of hemostats, the central block of tissue. Placing all the tissues on tension greatly facilitates dissection. Care should be taken to avoid cutting through old scars, branching sinus tracts or other areas of previous inflammation which may not have been circumscribed adequately. Any such suspicious area should be given wide margin.

The next step is the elevation of suitable flaps for closure of the fat and skin in the midline. Overlying the presacral fascia there is an area of fat and areolar tissue with tough fibrous strands and blood vessels, running more or less at right angles to the plane of the sacrum. This tissue is freed laterally and superiorly, the line of dissection remaining close to but above the presacral fascia, until the gluteal fat has been undermined for a distance of about an inch and a half.

All bleeding points are secured with plain No. 00 catgut ligatures. The lateral adhesive traction straps

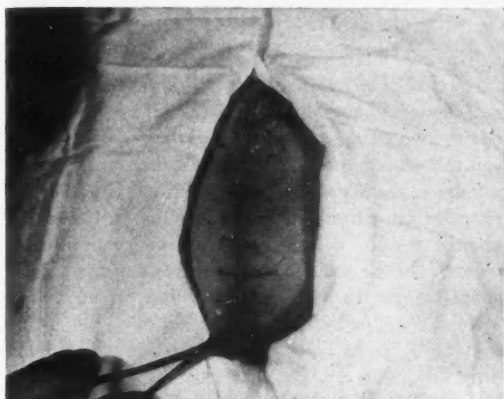


Figure 4.—Mattress sutures of No. 30 stainless steel wire placed close together to approximate full length of incision, with only the drainage site at the lower angle of the wound left open.

are removed from both sides, thus permitting the sliding of the lateral flaps medially to close the midline defect. Interrupted sutures of chromic No. 1 catgut are then placed through the deep gluteal tissue on both sides and anchored to the presacral fascia in the midline. The free ends of the sutures are left long and are held back out of the way with hemostats (Figure 3). All the sutures are placed before any are tied. The sutures near the level of the coccyx are merely passed from the gluteal fatty flap on one side to that on the other side without going through the midline fascia, since if the lowermost sutures passed through the fascia overlying the coccyx, they might cause a variable amount of coxalgia by traction on the mobile coccyx.

Figure 3 shows the extent of excision, the flaps undermined and the interrupted sutures in place. The sutures are then tied, the highest pair first and then in order downward, approximating the soft tissues to the midline and anchoring them to the presacral fascia. A drainage incision an inch and a half to two inches long is then made downward and outward at a 45° angle from the tip of the coccyx. This incision is made through normal, healthy, fatty tissue. Communicating as it does at this level with the previously undermined space above, it provides an excellent escape vent for accumulated serum, blood or liquefied fat, a certain amount of which inevitably forms in the region which was fairly widely undermined, and which, without adequate drainage, is responsible for a great many of the wound complications and recurrences encountered with other procedures.

Closely applied interrupted vertical mattress sutures of No. 30 stainless steel wire are then used to approximate the full length of the incision, leaving



Figure 5.—Pyramidal dressing, folded pressure gauze over coccyx, conical gauze drain in place, and wide adhesive straps to prevent distraction of buttocks.

open only the drainage site at the lower angle of the wound (Figure 4). The sutures must be placed fairly close together to get good apposition; otherwise there is likely to be troublesome overlapping of the skin margins and poor healing due to the moist condition of the skin in this area. Using a long, curved needle with a cutting edge, the deep portion of the vertical mattress suture is placed so as to grasp a generous portion of the deep, soft tissue on either side and approximate the tissue to the midline, thus preventing distraction from the line of incision and relieving some of the tension on the underlying catgut sutures.

If one passes a finger through the drainage wound to the tip of the coccyx, sufficient space will be felt beneath the lowermost catgut suture to allow free drainage of the previously undermined area above this point. Two 3 x 4 inch gauze squares are then rolled diagonally to form a point at one end which is inserted up to the tip of the coccyx. The outer end of the gauze drain is sufficiently bulky to keep the fatty drainage wound open.

The application of the dressing is technically a very important step in promoting good wound healing. A pyramidal gauze dressing is applied in the gluteal crease in such a way that it will follow the contours of the sloping buttocks on either side. This is done by first placing a narrow folded gauze strip for the full length of the incision, and then three increasingly wider folded gauze strips above the first, so that each folded strip of gauze placed is wider than the one below it. Four 4 x 4 inch pads are then folded into a small cube and placed above the previously applied dressings directly over the coccyx. This step is important, for it affords gentle pressure over the coccyx as it slopes downward and

POSTOPERATIVE CARE



Figure 6.—Example of excellent primary healing two weeks after operation.

somewhat forward just above the anus. If this last pledget of gauze is not used there will be a dead space at this point which is not firmly supported by dressings. Adhesive straps are then placed across both buttocks to draw them together snugly against the pyramidal dressing (Figure 5).

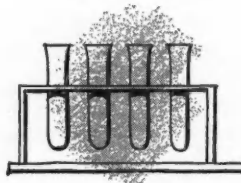
The patient is instructed to lie flat on the back for six hours postoperatively. This position affords sufficient pressure to prevent vascular oozing from the depths of the wound. After that, if the patient can tolerate the position, it is best that he lie on the abdomen the greater part of the time. However, he may lie on either side. He must be instructed to change position carefully to avoid distraction of the wound. On the second postoperative day the conical shaped gauze drain is removed and replaced with a fresh one, using sterile precautions. The drain may be changed daily for three to four days thereafter, if necessary. By that time practically all of the drainage has ceased and the drainage wound is attempting to heal.

Penicillin is continued for a period of four to seven days postoperatively, depending upon the acuteness and extent of the infection present before operation.

The wound is not disturbed for ten days, at which time the dressing is changed for the first time. The wire sutures are removed ten to twelve days after operation. By that time the wound should be excellently healed per primum with a hairline scar. Figure 6 shows an example of excellent primary healing two weeks after operation.

All patients are instructed to avoid sitting as much as possible for two weeks, and, when sitting is necessary, to sit directly on the ischial tuberosities and not slump down in a chair with the weight on the sacrum and coccyx.

1033 Gayley Avenue, Los Angeles 24.



Hydroxydione Sodium (Viadril®) for Anesthesia

A Report of Clinical Experience

CHARLES D. ANDERSON, M.D., Oakland

HYDROXYDIONE SODIUM (Viadril®) is a steroid and is the first such product to be useful for producing anesthesia. Steroids of various kinds are produced in great quantities continuously by various organs of the body. These steroids play their roles in the economy of the human body and are then destroyed and eliminated. The capacity of the human body for the catabolism and elimination of steroids must be of a considerable magnitude.

Theoretically, then, the intravenous administration of Viadril into humans should not present, as other anesthetic agents do, an unusual demand on the tissues and organs of the body for the elimination of it. If clinical practice can substantiate this thesis, steroid anesthesia should eliminate most of the pathophysiological complications seen with other anesthetic agents.

This report is concerned with the use of Viadril in approximately 60 cases for anesthesia during surgical operation. In some cases the slow method of injection with 0.5 per cent solution of Viadril was used, which produced hypnosis in about ten minutes and anesthesia in 15 to 20 minutes, and in other cases the fast method of injection with 2.5 per cent solution of Viadril, which produced hypnosis in three to five minutes and anesthesia in seven to ten minutes, was used. Injection was not made directly into a vein by either method, but rather into a rapidly flowing intravenous infusion kit of 5 per cent dextrose in water which was connected to a large bore needle placed in a vein. This technique, which increased the dilution factor, was an attempt to diminish the irritant effect of Viadril on the intima of the vein.

Soon after hypnosis appeared, endotracheal intubation could be readily accomplished without the use of other anesthetic agents or the use of relaxant drugs. However, in almost all instances, supplementation with other anesthetic agents was necessary for complete surgical anesthesia. Nitrous oxide and oxygen was used for this purpose in practically all cases. Relaxant drugs to promote muscular re-

* Hydroxydione sodium (Viadril®) is a new anesthetic agent, derived from a family of chemical compounds not previously associated with anesthetic properties—namely, the steroids. The use of Viadril in sixty operative procedures provided the basis of this communication, which reports the signs of anesthesia and the main pharmacophysiological effects of Viadril as observed clinically.

laxation were frequently used. Occasionally meperidine (Demerol®) or a barbiturate was added. In a few instances, patients received supplementary injections of Viadril, one receiving a total of 3 gm. In a few cases the technique was reversed by initiating anesthesia with barbiturates and relaxants and then maintaining anesthesia with Viadril, nitrous oxide and oxygen. Regardless of the method used, uniformly satisfactory results were obtained.

The minimal dose for adults (ages 14 to 67 in the present series) is relatively constant at 750 to 1,000 mg. Such an initial dosage will produce mild anesthesia for about 60 to 90 minutes. Larger initial doses were necessary to produce deeper anesthesia and increased duration. The most frequently used dosages were in the range of 1,250 to 1,500 mg.

Signs of Anesthesia

The signs of anesthesia with Viadril as they were observed in this series were:

1. Onset of hypnosis without a period of excitement.
2. Dilatation of the pupil as hypnosis appeared.
3. Mild hypotension which was usually transient.
4. Tachycardia, in most cases, which usually lasted 20 to 30 minutes and did not appear to be wholly related to hypotension.
5. Decrease in either respiratory rate or respiratory volume or both. The respiratory pattern varied considerably between patients. The most frequent observation was a decrease in depth of respiration of varying degree. Whenever a decrease in respiratory rate was observed, it was always accompanied by a decrease in respiratory volume. In a smaller group of patients apnea occurred, which necessitated manual ventilation for 30 to 60 minutes.

Presented before the Section on Anesthesiology at the 85th Annual Session of the California Medical Association, Los Angeles, April 29 to May 2, 1956.

From the Samuel Merritt Hospital, Oakland 9.

The Viadril used in this study was supplied by Charles Pfizer & Co., Inc., Brooklyn, N. Y.

During the second hour of Viadril anesthesia, the effect of the drug begins to wear off and further medication is needed. The most important sign of lightening of anesthesia was a rather rapid constriction of the pupil from the dilated stage. Usually this phenomenon occurred three to five minutes before the usual signs of inadequate anesthesia appeared, which gave time for supplementation of anesthesia.

Pharmacophysiological Effects

Noteworthy pharmacophysiological effects of Viadril on patients observed in the present series were:

1. *Hypnosis and analgesia.* Viadril is similar to barbiturates, but has a slower onset and a greater duration of effect. Also, as with the barbiturates, the analgesic effect of Viadril appears to be minimal.

2. *Vagotropic effects.* Whereas barbiturates are mildly vagotonic in effect, Viadril is definitely vagolytic. Such an effect is evidenced by—(a) pupillary dilatation, (b) frequently observed tachycardia, and (c) ease of endotracheal intubation.

3. *Depression of vital centers of the brain.* The decrease in respiratory ventilation and the hypotension that follows the onset of anesthesia with Viadril suggests a depressant effect on the vital centers of the brain. This effect is most pronounced during the first 20 to 40 minutes of anesthesia. Such a duration of depression of vital centers contraindicates the use of Viadril for short procedures unless the anesthesiologist is prepared to support the patient until the function of the vital centers returns.

4. *Decrease in muscle tone.* In 15 to 20 minutes following the administration of Viadril, muscle tone decreased. In some instances, laparotomy was done without the need or use of muscle relaxant drugs. However, in most cases, muscle atony was insufficient and muscle relaxant drugs were needed.

5. *Rapid catabolism.* The emergence of patients from Viadril anesthesia was quite unique. As the hypnosis lessened, the patient entered a stage of excitement which usually lasted about 30 to 60 minutes. Although the patient appeared awake, he was unaware of his surroundings and was not cooperative. To prevent injury, he had to be watched. Emerging from the excitement period, the patient looked and felt alert. Postoperative nausea and vomiting was minimal (the incidence was less than 10 per cent). Patients who received Viadril did not have the "hangover" effects usually seen with other forms of general anesthesia. This postoperative effect of Viadril was most striking and certainly suggested a rapid and complete destruction of the steroid by the body, with an absence of toxic end products from such catabolism.

Very early in the series, the greatest disadvantage of Viadril became apparent. Viadril, even in weak solution, is highly irritant to the intima of veins. At the time of injection, patients complained of pain or discomfort in the extremity receiving the infusion. Further evidence of the irritating quality of Viadril on the vein was the high incidence—more than 50 per cent—of postoperative thrombophlebitis which was observed both in patients who had discomfort and those who did not at the time of injection. Thrombophlebitis caused discomfort for weeks. Not infrequently the discomfort of the thrombophlebitic vein outlasted the discomfort at the operative site by days to weeks. Although attempts to modify the technique of administration of Viadril to decrease the incidence of thrombophlebitis were made, no satisfactory solution to the problem was found.

The high incidence of thrombophlebitis due to the irritant quality of Viadril in solution will hinder the wide acceptance of an otherwise very useful and highly desirable anesthetic agent.

Hawthorne and Webster Streets, Oakland 9.





CASE REPORTS

Reaction Following the Use of Meprobamate (Miltown®)

CHARLES GEORGE STEFFEN, M.D.,
MAX CHERVIN, M.D., and
BRUCE VAN VRANKEN, M.D., Covina

INVESTIGATORS have recently studied a new tranquilizing drug, meprobamate, or 2-methyl-2-n-propyl-1,3-propanediol dicarbamate, which is marketed under the names Miltown® and Equanil®. There have, however, been few reports of toxic effects of this drug. In the case here reported, severe reaction followed the ingestion of Miltown.

REVIEW OF THE LITERATURE

Berger¹ studied the pharmacological properties of Miltown. He stated that small doses brought about muscular relaxation and sedation and that the drug had a duration of action about eight times longer than that of mephenesin. Selling³ reported the results of administering Miltown to 187 patients with various psychiatric disorders. He concluded that it was a practical, safe and clinically useful central nervous system depressant. Borrus² also studied the clinical effects of Miltown and he concluded that it proved most effective in anxiety states and offered promise in such diseases as epilepsy and paralysis agitans.

There have been few toxic effects of the drug reported. Berger¹ indicated that in animal studies Miltown was even less toxic than mephenesin. Large doses were tolerated without ill effects. Selling³ said that in the series he observed only three patients had allergic response to Miltown. Two of them had fainting spells and a temperature of 102° F. two and a half hours after administration of two 400 mg. tablets. It took two days for the first patient's fever to go down and for edema to disappear. Urticaria developed in the second patient after four days of treatment with Miltown. In the third patient angioneurotic edema developed after Miltown had been taken for six days. Borrus² noted no complaints of dizziness, vertigo, nausea, vomiting, diarrhea or dermatological manifestations while the patients in the series he reported upon were receiving Miltown.

From the Department of Dermatology, University of Southern California (Steffen).

Submitted May 23, 1956.

REPORT OF A CASE

The patient was a 47-year-old white man who had no serious illness until February 24, 1956. On that day he became emotionally upset because of the death of his mother and was given a tablet of Miltown (400 mg.) by his wife. Five hours later he noticed the onset of a shaking chill, generalized feeling of malaise, weakness, redness of the face and frequent yawning. Forty-five minutes after the onset of these symptoms, and because of them, he took a capsule of Transibarb® (containing d-desoxyephedrine hydrochloride 2.5 mg., phenobarbital 16.2 mg., dl alpha tocopheryl acetate 5 mg.). The vertigo and nausea continued and the patient reported to a physician.

Upon examination at that time the patient was observed to be somewhat apprehensive, perspiring and apparently uncomfortable. The temperature was 103° F. There was blotchy erythema over the entire body, greatly accentuated over the bathing trunk area, where there were scattered innumerable pinpoint petechiae. The erythema blanched on pressure. There were no lesions of the mucous membranes. Except for a pulse rate of 130, no other abnormalities were noted on physical examination.

The patient was admitted to the hospital immediately. An attack of syncope occurred shortly after admission while the patient was undergoing roentgenologic examination. He fell, receiving a laceration over the occipital area of the scalp.

Leukocytes numbered 11,600 per cu. mm. of blood—4 per cent stab forms, 76 per cent segmented neutrophils and 20 per cent lymphocytes. There were 94,000 platelets per cu. mm. A Rumpel-Leede tourniquet test caused an abnormal number of petechiae. Electrocardiographic examination was reported as showing sinus tachycardia.

The patient was treated with large doses of corticotropin (ACTH) intravenously, initially 20 units in 1,000 cc. of 5 per cent glucose in distilled water, and prednisone by mouth, 60 mg. the first day and then reduced rapidly. The erythema began to fade the following day and the temperature returned to normal after the second day. The blood cell content at this time was normal. The patient was discharged from the hospital after four days. Upon physical examination at that time no abnormality except generalized fine desquamation of the skin was noted.

COMMENT

The patient in the case here reported definitely had a toxic drug reaction. He ingested two drugs, Miltown and Transibarb. For the following reasons it is believed that the reaction was to Miltown: The patient noticed the onset of malaise, vertigo, flushing and yawning before he took Transibarb. The Transibarb capsule was taken because of the symptoms that developed after the ingestion of Miltown. There was no sudden change of the symptoms for the worse after the Transibarb was taken. Finally, the reaction was similar to reactions due to Miltown described by Selling.³ Miltown is now being advocated for a wide range of diseases.^{2,3} Few instances of toxicity following its use have been reported.

SUMMARY

A patient had severe toxic reaction following the ingestion of Miltown. This reaction consisted of vertigo, fever, syncope, erythema, purpura, and increased lymphocyte and platelet content in the blood. So far as is known, this is among the few reports of a severe reaction following the use of this drug.

248 West Badillo, Covina (Steffen).

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Untoward Reaction to Meprobamate (Equanil®)

NORMAN E. LEVAN, M.D., and
CARROLL F. MUNDY, M.D., Bakersfield

THE EXTREME PRESENT POPULARITY of the recently introduced ataraxic drug meprobamate* makes advisable wide dissemination of information concerning a severe and characteristic reaction which may appear as early as an hour after the first administration of the drug. A few instances of untoward reactions similar to the one herein described have already been recorded.^{1,2,3,4,5}

REPORT OF A CASE

The patient, a 32-year-old white woman, ingested one 400 mg. tablet of Equanil® (meprobamate) for the first time, on May 28, 1956. Two hours later she noted a warm flushed feeling and a few moments later a red rash, beginning about the neck and

From University of Southern California School of Medicine, Department of Dermatology, Los Angeles 33 (Levan).

* Meprobamate is marketed by Wallace Laboratories under the trade name of Miltown, and by Wyeth, Inc., as Equanil.

Submitted July 28, 1956.

rapidly spreading to involve the upper arms, axillae, chest and bathing trunk area. In addition, there was a feeling of faintness and some nausea. On examination four hours after onset of these symptoms the only significant physical abnormality was a bright red diffuse involvement of the skin in the areas mentioned, without appreciable edema, purpura or any urticarial component. A hemogram and results of urinalysis were normal.

The patient was given prednisone, 10 mg. orally every four hours, and rapid relief occurred; after two hours there was only mild erythema and slight itching of the groins and breasts and these symptoms disappeared within another day. A patch test of the skin for reaction to a crushed tablet of Equanil elicited some itching within 36 hours, but the visible reaction was so slight as to be doubtful.

To verify that meprobamate was the cause of the reaction, on June 20, 1956, the patient was asked to take a test dose of 100 mg. (one-fourth of a tablet). Instead she took an entire tablet. An hour later there was a recurrence, in more severe form, of the original reaction, with bright erythema of the same areas, six or seven brief fainting spells within a three-hour period, numbness of the legs, pronounced weakness, nausea and emotional upset described by the patient as "feeling ready to burst into tears." Relief was again achieved with prednisone, although more slowly than before.

2741 H Street, Bakersfield.

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Postpartum Tetany and Psychosis Due to Hypocalcemia

PHILLIP L. ROSSMAN, M.D., and
ROBERT M. VOCK, M.D., Santa Monica

A 24-YEAR-OLD Mexican girl was brought to the emergency room of the hospital on March 10, 1955, at 5:30 p.m. because the family was concerned about her mental confusion which they said had been present for about three weeks. Vomiting and diarrhea had been present on and off for one week, diplopia for one day. The patient had delivered a normal infant on February 1, 1955. During the

From the Medical Clinic, Saint John's Hospital, Santa Monica.
Submitted January 30, 1956.

latter part of pregnancy she had had slight hypertension and mild albuminuria. When examined in the emergency room, the patient's temperature was normal; she was confused and disoriented but cooperative. Within a few minutes after admission she had a generalized tonic convulsion, then a clonic convulsion which lasted several minutes. The patient had not been taking insulin.

The tentative opinion was that she was having an epileptic form of seizure and symptomatic supportive therapy was given, including sodium Nembutal (pentobarbital) 0.25 gm., administered intravenously. The convulsion lasted about three to four minutes and was followed by deep coma.

Abnormalities noted upon complete examination were generalized flaccidity, small fixed pinpoint pupils, deviation of the right eye to the right and Babinski's reaction bilaterally. The patient was not perspiring and there was no nuchal rigidity. The blood pressure was 140 mm. of mercury systolic and 100 mm. diastolic.

It was the impression that the patient was in post-epileptic coma, but in view of the extreme flaccidity a neurological lesion was contemplated, such as a spontaneous hemorrhage from a cerebral aneurysm or a brain tumor. Idiopathic hyperinsulinism, diabetic coma, postpartum eclampsia and uremia were also considered.

No abnormalities were noted on examination of the spinal fluid. A specimen of urine obtained by catheter showed no sugar, a trace of acetone, one-plus reaction for albumin and 20 to 30 hyaline casts per field. The hemoglobin content of the blood was 10.5 gm. per 100 cc. and erythrocytes numbered 4,150,000 per cu. mm. Leukocytes numbered 19,000 per cu. mm.—neutrophils 92 per cent, lymphocytes 8 per cent, blood platelets adequate.

Within an hour after admission the patient began to move and moan. Upon reexamination no nuchal rigidity was noted. The pupils were equal and reacted to light. The external ocular muscles and the optic fundi were normal. The heart and lungs were normal to auscultation. Tendon reflexes were normal. Babinski's sign was absent. Milk was draining freely from the breasts.

A satisfactory diagnosis had not yet been established. The abnormalities in the urine suggested uremia as the most likely possibility. However, the blood urea nitrogen, nonprotein nitrogen and carbon dioxide combining power were within normal limits.

About an hour and a half after the convulsion, the patient was conscious but slightly confused. Transient quivering and stiffness of the fingers of the right hand was noted. A Chvostek test elicited contraction of the upper and lower lips, and upon attempt to evoke Trousseau's sign a definite carpal spasm occurred.

These new signs taken together with the recent pregnancy and the fact that the patient had been nursing her child suggested postpartum hypocalcemia with acute tetany. Members of the family said that the patient had not taken calcium during preg-

nancy, had not ingested much milk and had eaten only small amounts of meat about twice weekly. The patient had never had any thyroid therapy or surgical operations. Further studies of the blood were ordered and the patient was given intravenous calcium therapy.

Results of laboratory determinations were as follows:

On admission: Serum calcium 7.05 mg., serum phosphorus 3.2 mg., nonprotein nitrogen 28.0 mg. and blood urea nitrogen 6.0 mg. per 100 cc.; carbon dioxide combining power 44 volumes per cent. A Sulkowitch test showed normal calcium excretion. Repeated follow-up examinations of the urine were within normal limits in all respects. Total serum protein was 5.6 gm., serum albumin 2.8 gm. and serum globulin also 2.8 gm. per 100 cc.

Two days later (March 12): Serum calcium was 8.1 mg. per 100 cc.

Four days after admission: Serum calcium was 8.25 mg. per 100 cc. and serum phosphorus 3.8 mg. per 100 cc. The result of a thymol turbidity test was 1.2 units (normal up to 4). Cephalin flocculation reaction was negative. A bromosulfalein retention test was within normal limits. A serologic test for syphilis was negative.

The patient was given a high protein diet, and 25 gm. of serum albumin was administered intravenously. Nine days after admission following vigorous calcium therapy, the serum calcium was 9.4 mg. per 100 cc. and serum phosphorus 3.8 mg. per 100 cc. The total serum protein on March 19, 1955, was 7.6 gm., albumin 4.0 gm. and globulin 3.6 gm. per 100 cc. X-ray films of the skeleton showed no evidence of abnormality attributable to nutritional deficiency.

Throughout the subsequent period of hospitalization the patient remained conscious and free of convulsive episodes. Generalized hyporeflexia continued for about 72 hours, as did Trousseau's and Chvostek's signs. As was indicated by the serial blood calcium studies previously mentioned, the biochemical response to specific therapy was satisfactory. However, the delusions and hallucinations for which medical aid was initially sought persisted and were further accentuated during the hospital stay. Calcium was administered both orally and parenterally in the form of calcium gluconate. A vitamin D preparation (Ertron, 5 mg. daily) was added to this regimen but was later supplanted by dihydrotachysterol capsules, 1 cc. three times a day. During the early part of the patient's hospitalization and prior to the return of serum calcium to a normal level, bouts of tachycardia were observed. An electrocardiogram showed low T waves in A V F and diphasic T waves in V₂ and V₃. The QT interval was within normal limits. An electroencephalogram showed no focal or general abnormalities.

The patient was transferred to the psychopathic unit of the Los Angeles County General Hospital on the ninth day after admission, since mental symp-

toms had deteriorated to the point of violently disturbed behavior requiring psychiatric institutional care.

Improvement was noted after one month and the patient was discharged as mentally cured two months after onset. An electrocardiogram taken eight months later showed no change from the previous one except for an upright TV_3 .

REVIEW OF LITERATURE

In 1830 Steinheim⁸ reported a case of tetany associated with pregnancy and lactation. Kehver⁶ in 1913 observed that the Chvostek sign was present in 75 per cent of all pregnant women. In an extensive review of the literature on tetany in relation to pregnancy, Anderson and Musselman¹ tabulated cases of idiopathic tetany, tetany associated with lactation, tetany associated with thyroid disease, tetany following thyroidectomy, tetany during pregnancy, tetany during delivery, tetany due to low calcium intake, exacerbation of tetany with menses, tetany with psychic changes and bilateral cataracts, and tetany due to loss of blood.

Maternal tetany with or without psychosis aroused widespread interest in the medical profession for the first time in the middle of the 19th century. Trousseau's name, so intimately connected with the present-day concept of tetany, was originally linked to this type of tetany to the exclusion of all other forms. The name of Trousseau's first treatise⁹ on the subject of tetany was "Contractures des Nourrices." In that treatise Trousseau reported observing in mothers with suckling infants the well-known phenomenon to which his name is attached. Having observed an "epidemic" of such "nursing contractures" at that time, he was led to believe that this was the most common form of tetany. Trousseau later realized the considerably broader aspects of tetany.

Frankl-Hochwart⁴ at the beginning of this century was the first to contribute a comprehensive and critical summary of the subject of tetany; and he described in detail case histories of the various aspects of the syndrome. With regard to maternal tetany he collected reports of 53 cases from the then existing literature and added 23 cases he had observed, making a total of 76. Frankl-Hochwart also observed epidemics of the various types of tetany occurring in certain groups of individuals at certain times of the year. He emphasized that the most outstanding common single factor among cases of maternal tetany was seasonal occurrence in the late winter and early spring. Three out of four cases of maternal tetany in the series he reported upon occurred between the months of January and April. The majority of patients belonged to the lower income groups. About 10 per cent of the patients in the series had symptoms of psychosis of a toxic metabolic type which in no way differed from postpartum psychosis not ascribable to any specific cause.

Greene and Swanson⁵ noted that in five of 18 patients with hypoparathyroidism a psychosis developed which took up to a month to improve. They described no specific type of psychosis in tetany, but a "toxic" type of delirium predominated, with delusions and hallucinations. They observed that sexual hallucinations, delusions of persecution, mental depression and tendency to suicide occurred. The psychic manifestations they noted, may be present only temporarily during and following a convulsion or they may persist for several months. The prognosis is usually good but the mental recovery is usually delayed one or more months after the serum calcium becomes normal. The cause of the psychosis is not known.

DISCUSSION

The differential diagnosis in the case of a female patient having generalized convulsions should include epilepsy, alkalosis due to hyperventilation, hypoglycemia, meningitis, tetanus, eclampsia, uremia, strychnine poisoning, brain tumor, cerebrovascular accident, and hypocalcemia. The latter can be due to a low calcium intake, negative calcium balance as seen in pregnancy and lactation, hypoparathyroidism either spontaneous or following the removal of a parathyroid tumor or after total thyroidectomy. Low serum calcium also occurs in so-called renal rickets where, because of renal insufficiency, the excretion of phosphates is impaired, causing a rise in serum phosphorus.³ This causes a decrease in serum calcium, probably due to the precipitation of insoluble calcium phosphate in the intestines. If the serum calcium levels become low enough, tetany and convulsions may occur. However, these complications are somewhat blocked by the coexistent acidosis.

The hypocalcemia in the case herein reported was the result of pregnancy, lactation and low calcium and low protein intake.

According to Best and Taylor² over 60 per cent of the skeletal calcium of the newborn is deposited during the last two months of prenatal life. However, the greatest loss of maternal calcium is to the suckling child, amounting to over 80 gm. secreted during a normal period of lactation (nine months) compared to 20 gm. of calcium lost during pregnancy. At the time of the convulsion the patient in the present case was five weeks postpartum; she was nursing her infant and had a heavy flow of milk. She had not taken the prescribed calcium supplement, she did not drink milk or milk products, and her protein intake (meat) was inadequate.

Protein foods tend to increase the absorption of calcium, since the latter forms soluble complexes with certain amino acids. Of the total serum calcium about 45 per cent appears to be bound by protein (nondiffusible), with the remainder present as calcium ions (diffusible). The nondiffusible calcium varies with the protein concentration of the plasma. Calcium concentrations are usually lower with hypoalbuminemia; the globulin factor has a lesser effect.

The carbon dioxide combining power in the present case was 44 volumes per cent, which is almost a normal level. This may have had a tendency to aggravate the tetany tendency as the serum ionized calcium is probably increased in acidosis and decreased in alkalosis. The patient's vomiting and diarrhea were probably due to a nonspecific gastroenteritis and may have had some effect on the level of the carbon dioxide combining power.

Did this patient have hypoparathyroidism or postpartum psychosis? She had not had either a thyroid or parathyroid operation, which is the usual cause of parathyroprivic tetany. However, spontaneously arising cases have been reported.⁷ In hypoparathyroid patients the serum calcium is low, phosphorus is high and carbon dioxide combining power essentially normal. In patients with low calcium intake and/or lactation, the calcium is low and the phosphorus low or normal, as it was in the present case. The reported cases in the literature do not always clearly differentiate these two types of tetany, especially in relation to psychosis, hypocalcemia and lactation.

The onset of postpartum psychosis is within two to three weeks after delivery in four-fifths of the cases. There is usually some evidence of previous psychotic episodes and frequently there is some activating mental and physical stress such as prolonged labor, hemorrhage, puerperal infection, elderly primiparity, anemia, toxemia or constitutional psychopathic background. The onset in this case was five weeks postpartum, with malnutrition and possibly hyperlactation as stress factors.

Psychoses that occur in association with well-differentiated somatic disorders are of interest because of the opportunities they offer of correlating mental manifestations with tangible pathological factors. This is particularly true of the psychoses associated with disorders of metabolism. The clinical manifestations and the significant depression of the blood calcium level together with the history of poor dietary intake and superimposed lactation, can certainly not be disregarded in the course of the self-limited "postpartum psychosis" of the patient in the case herein reported. There is no reason to believe that there is a specific tetany psychosis.

However, the muscular disturbances of a neurological nature and the psychosis are both the result of a toxic process affecting the central nervous system.

TREATMENT

Treatment was directed toward correcting the calcium and protein deficiency by giving calcium intravenously at the outset and then orally, and by a high protein diet. A small amount (25 gm.) of albumin was given intravenously. Vitamin supplements, especially vitamin D, were also administered. Dihydrotachysterol was given to increase the intestinal absorption of calcium but its effect in patients with other than hypoparathyroidism is probably not needed.

SUMMARY

A case of hypocalcemia in a lactating mother who had been on a deficient calcium and protein diet is presented. The patient had psychosis, tetany and generalized convulsions, all of which responded to calcium therapy.

1441 Westwood Boulevard, Los Angeles 24.

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California MEDICINE

For information on preparation of manuscript, see advertising page 2

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EDITORIAL

Voluntary Health Insurance

VOLUNTARY HEALTH INSURANCE, the lusty infant of the insurance world, continued its phenomenal growth last year and established new record highs in the number of people covered and the scope of their coverage.

A report just published by the Health Insurance Council showed *some* form of protection was in effect for 107,662,000 persons in this country.

The Health Insurance Council, comprising in its membership eight of the large associations of life and casualty insurance underwriters, represents an estimated 90 per cent plus of all commercial underwriting in the health insurance field. Its annual report, the tenth published, includes figures on commercial underwritings, Blue Shield-Blue Cross coverage and independent plans.

Continuing huge strides in this field have regularly amazed even insurance executives, who are accustomed to the cautious explorations of new fields of coverage in much the same manner as the physician watches new fields of therapy. Just as the physician is concerned with the health and life of people, the insurance man is concerned with the funds held in trust for policyholders or stockholders; he must not gamble or take undue risks.

In these circumstances it is amazing that this new field of insurance has matched in a few short years the coverage that took a century for life or fire insurance to attain.

Historically, voluntary health insurance goes back only to 1932, when the late Doctor Ray Lyman Wilbur produced a report for The Committee on the Costs of Medical Care which found that a national need existed for providing the common man with a means of paying his medical costs and, simultaneously, offered the voluntary method of providing

an insurance prepayment system as the approach for meeting this need.

Soon after the issuance of this report, hospitals started their prepayment plans, which today are known as Blue Cross. Some years earlier, physicians in the State of Washington had set up county-by-county medical prepayment plans, the first medical venture in this direction.

California was the first state to have a statewide medical care prepayment plan, when the California Medical Association organized California Physicians' Service. CPS issued its first contracts in 1939.

Under these stimuli the insurance industry entered the health insurance field in a more aggressive manner and, according to the new Health Insurance Council report, have succeeded in underwriting various forms of coverage for close to 60,000,000 persons at this time.

Statistically, the Health Insurance Council report shows that at the close of 1955, hospital expense insurance was carried by 107,662,000 persons, surgical expense protection by 91,927,000 and regular medical expense insurance by 55,506,000. These figures include both employed persons and dependents and are arrived at after eliminating duplicating coverages which would increase the totals to the extent that more than one coverage is carried by many persons.

In terms of growth, hospitalization insurance in 1955 recorded a gain of 6.1 per cent in the number of persons covered, compared with a population growth of 1.9 per cent. Surgical expense coverage showed a 7 per cent gain in 1955 and regular medical expense coverage went up 17.5 per cent.

Progress in these fields is in line with the experience of the voluntary health insurance programs. Hospitalization insurance, the oldest form of this type of coverage, attained high totals of coverage some years back and is now advancing more slowly.

Surgical coverage, the next oldest in the field, shows a greater percentage gain in 1955; and regular medical expense coverage, the youngest of these three, added the highest percentage gain.

Even newer in the health insurance industry is the field of major medical expense coverage. Where regular medical expense insurance is designed to provide payment for the calls of physicians in usual nonsurgical cases, major medical expense insurance is designed to give protection against unusually heavy costs in catastrophic, chronic or long-term illnesses. It takes up where regular hospital and medical care insurance leave off and generally provides for the payment of 75 or 80 per cent of the cost to the patient over and above his coverage under regular contracts. The percentage participation is designed to assure a measure of co-insurance by the contract holder, who is thus encouraged to keep his total costs to a level where he can meet the 20 or 25 per cent contribution which he must make.

This baby in the field chalked up a gain of 138 per cent in number of persons covered in 1955. At the year end, 5,241,000 persons had voluntary health insurance of this type, a striking growth evidence in an experimental sphere of insurance.

The Health Insurance Council report shows that Blue Shield-Blue Cross plans covered 50,726,000 people at the end of 1955 and that independent plans had enrolled another 4,530,000. Percentagewise, the commercial insurance companies show that about 95 per cent of their hospital insurance policyholders also carry surgical expense coverage and about 42 per cent have regular medical cost coverage.

The Blue Shield-Blue Cross plans show that 77 per cent of those covered for hospitalization have surgical coverage and 58 per cent have regular medical cost protection. The independent plans, smaller in size and generally catering to more highly selected groups, show 96 per cent of their hospitalization subscribers with surgical cost and 100 per cent with regular medical care coverage.

The Health Insurance Council report offers prime evidence of the validity of the arguments offered some ten years ago by medical leaders, who asked that government keep its hands off this field of personal protection and let professional men work it out. The coverage recorded at the end of 1955 shows beyond doubt that a lot of work has been done and that people throughout the country are today enjoying the protection against hospital, medical and surgical expenses which the medical leaders promised to deliver.

The report also points to fields where additional work needs to be done. Ideally, all people would have protection against hospital, surgical and medi-

cal expenses. Percentagewise, there are gaps in the number of people so covered. In these gaps lies the challenge of tomorrow.

In addition to verifying the claims of yesterday's medical leaders, the current report shows the continuing effort to make available to the people the type of health insurance protection that is desired. The rapid growth of major medical expense coverage—the so-called “catastrophic” coverage—gives proof of the willingness of medical and insurance people to satisfy demands for specific forms of protection which can pass actuarial standards. The insurance industry, in both its commercial and medical sides, acts as a trustee for pooled funds belonging to others and cannot engage in reckless or uneconomical coverage. Rather, on the basis of careful planning and experimentation it can develop new forms of protection in an orderly fashion and offer them full-blown to the public. The Health Insurance Council report shows that this pattern is being followed; if the major medical cost coverage follows the same pattern as other forms of protection, it will gain at an accelerated pace in the next few years.

In terms of dollars, the Health Insurance Council report shows that in 1955 the underwriters of voluntary health insurance paid out \$3,125,000,000 in benefits. While it may be argued that the nation's total hospital-medical bill is much larger than this sum, it must be borne in mind that the real function of health insurance is not to achieve a complete relief from financial cost to its contract holders but, as the Health Insurance Council puts it, “to provide timely benefits in sufficient amount to prevent ill health and accident from leading to financial hardship.” This goal has certainly been achieved for the millions of persons now covered by voluntary health insurance.

Medical leaders may well be proud of their role in helping achieve the record growth of this infant industry. Under their leadership the first steps were taken to provide protection against the costs of illness or accident. Under their continued maintenance of their own plans, operating competitively with other voluntary programs, the public has been provided with added and new forms of coverage and has been assured of constant research and experimentation under controlled conditions.

In short, medicine has carried out its public obligations in splendid fashion and stands ready to continue and improve its public service in the health insurance field. What it has done, moreover, it has accomplished without government aid or participation and without resort to government reinsurance of contracts.

California MEDICAL ASSOCIATION

NOTICES & REPORTS

Council Meeting Minutes

Tentative Draft: Minutes of the 420th Meeting of the Council, Los Angeles, July 28, 1956.

The meeting was called to order by Chairman Lum in the Regency Room of the Ambassador Hotel, Los Angeles, at 9:30 a.m., Saturday, July 28, 1956.

Roll Call:

Present were President Charnock, President-Elect MacDonald, Speaker Doyle, Vice-Speaker O'Neill, Secretary Daniels, Editor Wilbur and Councilors Wheeler, Loos, Wadsworth, Pearman, Harrington, Sherman, Lum, Bostick, Teall, Kirchner, Varden, Heron, Carey and Rosenow.

Absent for cause, Councilors West, McPharlin and Reynolds.

A quorum present and acting.

Present by invitation during all or part of the meeting were Messrs. Hunton, Thomas, Clancy and Gillette and Mrs. Margaret Griffith of C.M.A. staff; legal counsel Hassard; Messrs. Ben H. Read and Eugene Salisbury of the Public Health League of California; county society executive secretaries Scheuber of Alameda-Contra Costa, Thompson of San Joaquin; Geisert of Kern, Marvin of Riverside, Foster of Sacramento, Nute of San Diego and Neick of San Francisco; Doctor Jay Ward Smith, assistant dean of Stanford University Medical School; Doctors Stafford Warren and Joseph T. Ross, dean and associate of UCLA Medical School; Doctors A. E. Larsen and William Gardenier and Messrs. Etchel Paolini and K. L. Hamman of California Physicians' Service; Mr. Rollen Waterson; Richard Blum, Ph.D.; and Doctors Dan O. Kilroy, Joseph F. Sadusk, Jr., Francis J. Cox and J. Philip Sampson.

1. Minutes for Approval:

(a) On motion duly made and seconded, minutes of the 418th Council meeting, held April 29-May 2, 1956, were approved.

(b) On motion duly made and seconded, minutes

of the 419th Council meeting, held May 2, 1956 were approved.

(c) On motion duly made and seconded, minutes of the 258th Executive Committee meeting, held May 2, 1956, were approved.

(d) On motion duly made and seconded, minutes of the 259th Executive Committee meeting, held May 26th, were approved.

(e) On motion duly made and seconded, minutes of the 260th Executive Committee meeting, held June 24, 1956, were approved.

2. Membership:

(a) A report of membership as of July 25, 1956, was presented and ordered filed.

(b) On motion duly made and seconded, 78 delinquent members whose dues had been received since the last Council meeting were voted reinstatement.

(c) On nomination duly made and seconded in each instance, two applicants were elected to Retired Membership. These were: John L. Steffy, San Diego County, and Martha A. James, San Francisco County.

(d) On nomination duly made and seconded in each instance, ten applicants were elected to Associate Membership. These were: George F. O'Brien, Alameda-Contra Costa County; Phyllis W. Brown, Orange County; Eloise Blinder, San Francisco

DONALD A. CHARNOCK, M.D.	President
FRANK A. MacDONALD, M.D.	President-Elect
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County; George F. Baier, III, Lester H. Keys, San Luis Obispo County; Vernon G. Bugh, Arthur Burris, Jacob A. Kohn, Louis R. Nash, Leonard A. Swanson, Ventura County.

(e) On motion duly made and seconded in each instance, reductions of dues were voted for eight members for reasons of postgraduate study or prolonged illness.

3. *Financial:*

(a) A report of bank balances as of July 25, 1956, was presented and ordered filed.

(b) A report of income and expenditures for the fiscal year ended June 30, 1956, was presented and ordered filed.

4. *State Department of Public Health:*

Doctor Malcolm H. Merrill, State Director of Public Health, reported that the incidence of poliomyelitis cases was following about the normal seasonal pattern, with an increase in cases noted in the past two weeks. The percentage of paralytic cases, 69 per cent, is the highest since 1951. The highest incidence occurs in the age group under five years, where formerly it was in the 5 to 9 year age group. Doctor Merrill also reported that greatly increased supplies of Salk vaccine are now available through both public and commercial sources.

Doctor Merrill also reported that allocations of funds in aid of hospital construction had been arrived at for the 1956-1957 fiscal year, under which \$5,931,000 federal and matching state funds will be used. Approved for this period are 22 projects, including ten general hospitals and 12 other structures, including health centers, diagnostic or diagnostic-treatment centers, nursing homes, chronic disease centers and others.

5. *Medical Review and Advisory Board:*

Doctor Joseph F. Sadusk, Jr., chairman of the Medical Review and Advisory Board, reported that a start had been made into the causes and background of professional liability. He requested approval of several steps previously approved by the Board, including:

1. Approval of the educational program outlined in a letter to Councilors.

2. Printing of the educational program and mailing to all members.

3. Approval for starting conferences with county society committees and officers.

4. Implementation of the "San Mateo Study" should that be deemed desirable.

On motion duly made and seconded, these requests were voted approval.

Doctor Sadusk also reported that meetings with representatives of the State Bar were continuing on

the subject of professional liability. He also reported on the possibility of securing funds from other sources to study the selection and education of medical students.

Doctor Sadusk requested authority for the Board to screen all advertising and exhibits presented by professional liability insurance underwriters. It was agreed that the Board should be consulted on this and that a member of the Board should consult with the Advertising Committee of CALIFORNIA MEDICINE.

6. *Executive Session:*

The Council went into executive session for approximately an hour and then arose from executive session.

7. *Committee on Insurance:*

Councilor Kirchner discussed the revised disability insurance contract proposed for offering at the close of the current contract year, providing a \$400 monthly maximum disability payment for a term of three years for illness or lifetime for accident, premiums based on age brackets. On motion duly made and seconded, it was voted to approve the proposed contract.

8. *Committee on Fees:*

Doctor Francis J. Cox presented a proposed petition to be filed with the Industrial Accident Commission of the State of California, asking various changes in the fees and conditions included in the present industrial fee schedule. On motion duly made and seconded, the petition was approved and authority granted for it to be filed.

9. *Committee on Other Professions:*

Doctor J. Philip Sampson, a member of the Committee on Other Professions, presented a committee report which urged clarification of a phrase adopted by the House of Delegates relating to the giving of intravenous injections by registered nurses. On motion duly made and seconded, it was voted that the Council define the phrase "under medical supervision" as meaning "Upon the oral or written order of a Doctor of Medicine for a specific patient."

Doctor Sampson also presented the committee's report and recommendations that further surveys of postgraduate training in other fields of the healing arts be carried on if indicated as desirable. On motion duly made and seconded, the report and recommendations were voted approval.

10. *Health Exhibit:*

Discussion was held on the requested cooperation of the Association with a newspaper in the promotion of a health exhibit. On motion duly made and seconded, it was voted to refer this request to the

Committee on Scientific Work, with the Public Relations department to be consulted.

11. *California Physicians' Service:*

Mr. K. L. Hamman reported that in areas where the \$6,000 income ceiling was in effect, the net growth of C.P.S. membership in the past year had been 22.35 per cent, compared with 5.64 per cent in other areas, and that 9.87 per cent of C.P.S. members are now covered under the higher ceiling. Mr. Hamman also stated that the gross income of C.P.S. had, for the first time in its history, exceeded \$30,000,000 a year. He also called attention to service costs of 86.26 per cent for the 1956 fiscal year, compared with 81.61 per cent the preceding year.

12. *Commission on Medical Services:*

(a) Councilor Carey, chairman of the Commission on Medical Services, recommended that the Committee on Maternal and Child Care be assigned as a subcommittee of the Commission on Public Health and Public Agencies. On motion duly made and seconded, it was voted to make this transfer.

(b) On motion duly made and seconded it was voted to make the Committee on Government Financed Medical Services a subcommittee of the Commission on Medical Services.

(c) Doctor Carey reported that the study of the cost of providing medical services for indigents in Butte County had been started under the direction of the Stanford University School of Medicine.

(d) Councilor Harrington, chairman of the Committee on Maternal and Child Care asked that a subcommittee on Maternal and Child Welfare be established for the purpose of studying maternal and perinatal deaths. He also reported that the State Department of Public Health was willing to employ investigators to look into the causes of such deaths. Cost to the Association in cooperating with this program would be not more than \$6,000. On motion duly made and seconded, these proposals were approved and the Committee on Maternal and Child Welfare was authorized to activate itself.

(e) On motion duly made and seconded, Doctor Chester L. Cooley was named as a member of the Commission on Medical Services, and chairman of the Committee on Indigent Care.

(f) On motion duly made and seconded, Doctor Thomas N. Elmendorf was elected a member of the Committee on Indigent Care.

13. *Committee on Legislation:*

(a) Chairman Dan O. Kilroy of the Committee on Legislation, reported the committee's recommendation that community mental health facilities be established as departments of general hospitals and be operated in the same manner as other medi-

cal departments of the hospital. He stated that the committee was prepared to draft proposed legislation to cover such provisions if Council approval were given. On motion duly made and seconded it was voted to authorize the preparation of such legislation and its submission to the Council for final action.

(b) Doctor Kilroy reported that legislation was in preparation to permit a more definite referral service to school children to specified types of the healing arts, with the exception of cases involving the eyes.

14. *Practice of Medicine in Medical Schools:*

On motion duly made and seconded, the Council Chairman's nominees for appointment to a special Committee on the Private Practice of Medicine by Medical School Faculty Members were approved.

15. *Public Relations:*

(a) On motion duly made and seconded, it was voted to approve a First Aid chart for production and distribution in school rooms and elsewhere.

(b) On motion duly made and seconded, it was voted to approve a Newsletter prepared by the Public Relations Department.

16. *Committee on Industrial Health and Rehabilitation:*

On motion duly made and seconded, it was voted to receive for publication an article submitted by a subcommittee of the Committee on Industrial Health and Rehabilitation which had been presented at the 1956 Annual Session, provided the committee chairman approved such article as coming from his committee.

17. *California Medicine:*

(a) On motion duly made and seconded, it was voted to approve a trip by members of the Advertising Committee of CALIFORNIA MEDICINE to meet with advertising representatives in eastern cities.

(b) On motion duly made and seconded, a resolution was adopted to commend a nonmember for his valuable contributions to the work of the Advertising Committee over a number of years.

18. *Student American Medical Association:*

On motion duly made and seconded, it was voted to approve the expenditure of not more than \$2,000 from the budgeted funds of the Public Relations Department to assist the San Francisco Medical Society in holding a series of meetings with medical students, interns and residents.

Adjournment:

There being no further business to come before it, the meeting was adjourned at 6:15 p.m.

DONALD D. LUM, M.D., *Chairman*
ALBERT C. DANIELS, M.D., *Secretary*

CALIFORNIA MEDICAL ASSOCIATION

Annual Meeting

Ambassador Hotel

LOS ANGELES

April 28 - May 1, 1957

Papers for Presentation

If you have a paper that you would like to have considered for presentation, it should be submitted to the appropriate section secretary (see list on this page) no later than November 19, 1956.

Scientific Exhibits

Space is available for scientific exhibits. If you would like to present an exhibit, please write immediately to the office of the California Medical Association, 450 Sutter Street, San Francisco 8, for application forms. To be given consideration by the Committee on Scientific Work, the forms, completely filled out, must be in the office of the California Medical Association no later than December 1, 1956. (No exhibit shown in 1956, and no individual who had an exhibit at the 1956 session, will be eligible until 1958.)

SCIENTIFIC PAPERS

SCIENTIFIC EXHIBITS

PLANNING MAKES PERFECT
AN EARLY START HELPS

SECRETARIES OF SCIENTIFIC SECTIONS

ALLERGY William J. Kerr, Jr.
711 D Street, San Rafael

ANESTHESIOLOGY Howard S. Downs
332 North Glendale Avenue, Glendale 6

DERMATOLOGY AND SYPHILOLOGY . . Edwin M. Hamlin
2932 North Fresno Street, Fresno

EAR, NOSE AND THROAT Seymour Brockman
2007 Wilshire Boulevard, Los Angeles 57

EYE Harold B. Alexander
14 West Valerio Street, Santa Barbara

GENERAL PRACTICE Thomas N. Elmendorf
Masonic Building, Willows

GENERAL SURGERY W. Kenneth Jennings
233 West Pueblo Street, Santa Barbara

INDUSTRIAL MEDICINE AND SURGERY . . Earle T. Dewey
400 Stockton Street, San Francisco 20

INTERNAL MEDICINE Donald W. Petit
960 East Green Street, Pasadena 1

OBSTETRICS AND GYNECOLOGY . . . Keith P. Russell
511 South Bonnie Brae, Los Angeles 57

ORTHOPEDICS Raymond M. Wallerius
2909 J Street, Sacramento 16

PATHOLOGY AND BACTERIOLOGY . . Dominic A. DeSanto
Mercy Hospital, San Diego 3

PEDIATRICS Sidney Rosin
6230 Wilshire Boulevard, Los Angeles 48

PSYCHIATRY AND NEUROLOGY . . . Howard A. Black
2901 Capitol Avenue, Sacramento 16

PUBLIC HEALTH James C. Malcolm
15000 Foothill Boulevard, San Leandro

RADIOLOGY Stanford B. Rossiter
1111 University Drive, Menlo Park

UROLOGY Edmund Crowley
1930 Wilshire Boulevard, Los Angeles 57



WOMAN'S AUXILIARY

TO THE CALIFORNIA MEDICAL ASSOCIATION

Your Auxiliary and Legislation

THE HISTORY of the Woman's Auxiliary to the California Medical Association shows an interest in legislation from the very beginning of the organization. Some years have found the Auxiliary more interested than others due to the necessities of the day. However, we now find there is something always taking the headlines for the legislative chairman to pursue. Today even the smallest Auxiliary is sure to have some form of legislation affecting it. We have come to know that we have to be alert on the local, city or county, state, and finally the national level in all fields of legislation affecting the public health and organized medicine.

We use various means to inform our membership about legislation. We have study groups, newsletters and a brief report to the membership at a general meeting.

We receive our information from your association and the parent organization, the American Medical Association. When a call comes from your organization asking for our help, we contact the county legislative chairman, and she in turn contacts the local membership. Because we have studied and informed ourselves, we are able to act.

Is there a medical vote?

News media today often headline a labor vote or some other voting bloc. When a piece of legislation is of interest to organized medicine, it is headlined "American Medical Association 'sponsors' or 'against.'" That applies equally to the California Medical Association and the county societies. That headline is You! Instead of the home town paper saying Doctor Doe is for or against, the headline is "organized medicine," meaning the A.M.A. or C.M.A.

When a legislator is asked by a physician to vote on a piece of legislation, the legislator often thinks that maybe one or two physicians "back home" are all that are interested in this piece of legislation.

Of course physicians do not vote as a bloc, but in most matters affecting the practice of medicine, physicians usually are pretty much of one mind.

Does the legislator know what the medical vote is?

Many political analysts believe that two per cent of the vote can turn the tide in an election. As a case in point, California in the last June primary had 5,437,403 registered Democratic and Republican voters. Two per cent of that is 108,748. Hence, for physicians and their wives to swing an election statewide, they would need to influence 108,748 votes. The combined membership of the C.M.A. and the Auxiliary is about 22,000. If every member of the California Medical Association and every Auxiliary member influenced five people on election day, that would be 110,000 or more than the two per cent which can turn the tide in an election. This may appear to be dreaming, but surely one well-informed, active person can influence five people. Actually, the potential is more. So when next you or I speak to Senator Doakes or Congressman Doe, we have a potential with which to impress him.

No other profession has been maligned and attacked more than the medical profession has been from time to time. Perhaps the anonymity in public affairs that the ethics of the medical profession instills into the individual physician has contributed to this situation. Hence, only in unity and by speaking collectively can organized medicine meet the challenge that confronts it.

We of the Auxiliary have the same aims you have. We have the opportunity to let our light shine in the day-to-day contacts we have. Is your wife a member of the Auxiliary? If she is not, she and you are missing a great opportunity to be informed on matters of vital concern to your profession. In an atmosphere of comradeship and friendship she can learn of the issues affecting medicine. She can be your ambassador of good will.

MRS. EVERETT B. STONE
Legislation Chairman

NEWS & NOTES

NATIONAL • STATE • COUNTY

ALAMEDA

A series of 13 weekly lectures in medicine for general practitioners will be given at the East Oakland Hospital, 2648 East 14th Street, Oakland, beginning September 18, by members of the faculty of the University of California School of Medicine in San Francisco.

The lecture series has been approved by the California Academy of General Practice for 25 hours of postgraduate work.

Sessions will be conducted on Tuesday evenings at 8 p.m., through December 11. Lecture topics are "Practical Aspects of Liver Disease," "Office Considerations of Kidney Diseases," "Practical Therapy of the Anemias," "Surgical Diseases of the Colon," "Current Treatment of Arthritis," "Functional Heart Diseases," "A Rational Approach to Antimicrobial Therapy," "Common Neurological Diseases," "Low Back Injuries, Diagnosis and Treatment," "Nursery Problems for the Physician in General Practice," "Prevention of Coronary Heart Disease," and "Evaluation and Use of New Drugs in Office Practice."

LOS ANGELES

Recently elected officers of the Los Angeles Radiological Society for 1956-57 are Dr. Hubert J. Prichard, president; Dr. Richard A. Kredel, vice-president; Dr. Putnam C. Kennedy, treasurer, and Dr. Lewis J. Peha, secretary.

The Los Angeles County Heart Association has established a chair of Cardiovascular Research at the UCLA School of Medicine, and Wilfred F. H. M. Mommaerts, Ph.D., has been appointed professor of medicine (experimental cardiovascular research) and director of the Cardiovascular Research Laboratory.

Dr. Mommaerts was previously associate professor of biochemistry at Western Reserve University Medical School.

The United States Public Health Service has granted \$11,500 to the College of Medical Evangelists School of Tropical and Preventive Medicine for continued study of poisonous and venomous fishes. Cutter Laboratories, Berkeley, has provided \$2,500 to the school for study of drugs utilized by primitive native peoples. Both grants will be used by the school's section on biotoxology.

Dr. Roger Barnes, chairman of the department of urology, College of Medical Evangelists School of Medicine, is now in Vellore, India, as a Fulbright scholar, lecturing in urology at the Christian Medical College. He will return to his CME post next July, according to an announcement from the school.

The school also announced several faculty changes and appointments. Dr. Clarence Stafford was appointed acting chairman of the division of surgery, and Dr. Howard S. Downs and Dr. Robert B. Shearer were named executive secretaries of the departments of anesthesiology and ophthalmology, respectively.

Drs. Morton Wolley and Richard Beltz were appointed instructors in the division of surgery and the department of biochemistry.

SAN FRANCISCO

Activities of the San Francisco District of the U. S. Food and Drug Administration, Department of Health, Education, and Welfare, will be shown on the half-hour TV show, "Success Story," KGO Channel 7 (San Francisco). The show will go on the air at 7:00 p.m. September 20, 1956.

Among the activities to be shown will be FDA inspectors making factory inspections of a food processing plant and a drug manufacturer. FDA chemists will be shown in the laboratory, analyzing food and drug samples, tasting tea samples, and testing fish for decomposition.

Also illustrated will be some recently exposed "quack" medical devices and FDA activities in Civil Defense and disasters.

This show is part of the nationwide observance of the 50th anniversary of the passage of the first Federal Food and Drug Law.

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Appointments of six new heads of departments in the University of California School of Medicine, San Francisco, were announced last month. Those appointed and the departments they head are: Dr. Leon Goldman, surgery, succeeding Dr. H. Glenn Bell; Dr. Ernest Page, obstetrics and gynecology, succeeding Dr. Herbert Traut; Dr. Henry Brainerd, general medicine, succeeding Dr. T. L. Althausen; Dr. Salvatore P. Lucia, department of preventive medicine (a new department); Dr. Alexander Simon, psychiatry, to succeed Dr. Karl Bowman, who retired July 1, and Dr. Henry Moon, pathology, to succeed the late Dr. James Rinehart.

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A two-day symposium on trauma will be held at the Franklin Hospital, San Francisco, September 29 and 30, for general practitioners, surgeons and industrial physicians. The program will present basic principles and recent developments in the management of the more common types of injuries.

The weekend symposium will be presented by the Active Staff of Franklin Hospital, in cooperation with University of California Medical Extension.

Further information and applications for enrollment may be obtained from Dr. Seymour M. Farber, Medical Extension, University of California Medical Center, San Francisco 22.

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The 27th annual postgraduate symposium on heart disease of the San Francisco Heart Association will be presented October 3 to 5 in the Colonial Ballroom, St. Francis Hotel, San Francisco. Cooperating with the San Francisco Heart Association are the Heart Associations of Alameda, Monterey, San Mateo, and Santa Clara counties. Guest speakers will be Drs. Michael E. DeBakey, Houston, Texas; Lewis Dexter, Boston; F. Henry Ellis, Jr., Rochester, Minn.; Robert P. Glover, Philadelphia; Edward D. Neuhauser, Boston, and Louis Leiter, New York.

SANTA BARBARA

The annual meeting of the Southern California Chapter of the American College of Surgeons will be held at the Biltmore Hotel, Santa Barbara, January 18 to 20, 1957. Guest speakers will be Dr. Alfred Blalock, professor of surgery at Johns Hopkins University, and Dr. Henry Harkins, professor of surgery at the University of Washington.

GENERAL

The Seventh Congress of the **Pan-Pacific Surgical Association** will be held in Honolulu, Hawaii, November 12 to 22, 1957. Further information and brochures may be obtained by writing to Dr. F. J. Pinkerton, Director General of the Pan-Pacific Surgical Association, Room 230, Young Building, Honolulu.

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Nationally known experts in the fields of surgery, neurology, obstetrics, gynecology, geriatrics, cardiology and dermatology will present papers specifically pertaining to the practice of the family doctor when the **California Academy of General Practice** convenes for its eighth scientific assembly October 14 to 17 at the Hotel Statler, Los Angeles, according to an announcement by the Academy.

Highlighting the program, the announcement said, will be lectures by Drs. Manuel E. Lichtenstein of Chicago, Christopher J. Duncan, Brookline, Mass., Sidney Farber of Boston, Clarence S. Livingood of Detroit, Richard W. Te Linde of Baltimore, Curtis P. Artz of Fort Sam Houston, Texas, and Edward J. Stieglitz of Washington, D. C.

Registration and further information is available from The California Academy of General Practice, 461 Market Street, San Francisco.

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The tenth annual meeting of the **Western Society for Clinical Research** will be held Thursday afternoon, Friday morning, and Saturday morning, January 31 through February 2, 1957, at Carmel, California.

Information regarding the meeting may be obtained from Arthur J. Seaman, M.D., Secretary-Treasurer, Western Society for Clinical Research, University of Oregon Medical School, Portland 1.

POSTGRADUATE EDUCATION NOTICES

THIS BULLETIN of the dates of postgraduate education assemblies and the meetings of various medical organizations in California is supplied by the Committee on Postgraduate Activities of the California Medical Association. In order that they may be listed here, please send communications relating to your future medical or surgical programs to: Mrs. Margaret H. Griffith, Director, Postgraduate Activities, California Medical Association, 417 South Hill Street, Los Angeles 13.

UNIVERSITY OF CALIFORNIA AT LOS ANGELES

Fundamental Principles of Radioactivity Including Clinical Use of Radioisotopes. Wednesdays, September 19, 1956 through July 3, 1957. One hundred eighty hours. Fee: \$700.00.

Photography in Medical Practice and Research. Thursdays, September 20 through December 13. Twenty-four hours. Fee: \$35.00.

Surgical Anatomy. September 24 to November 26. Fee: \$75.00.

Basic Course in Ophthalmology. Wednesdays, September 26 to May 29, 1957. Fifty-eight hours. Fee: \$125.00.

Diagnostic Bacteriology-Immunology for Medical Technicians. Tuesday evenings, October 2 to December 18. Thirty hours. Fee: \$30.00.

U.C.L.A. Clinical Conferences. First and third Thursdays, October 4 to June 20, 1957. Twenty-seven hours. Fee: \$50.00.

Special Topics in the Pathological Physiology of the Cardiovascular System. Mondays, October 8 to December 10. Twenty hours. Fee: \$50.00.

Dermatology in General Practice. Wednesdays, October 17 through November 21. Twelve hours. Fee \$30.00.

Aviation Medicine. October 24, 25, 26. Twenty-three hours.*

Contact: Thomas H. Sternberg, M.D., Assistant Dean for Postgraduate Medical Education, U.C.L.A., Los Angeles 24. BRadshaw 2-8911, Ext. 202.

UNIVERSITY OF CALIFORNIA, SAN FRANCISCO

Medicine for General Practitioners. East Oakland Hospital, Tuesday Evenings, September 18 to December 3. Twenty-four hours. Fee: \$50.00.

Postgraduate Seminar in Pharmacy. September 27 to 29. Fifteen hours. Fee: \$25.00.

Ophthalmological Conference on Glaucoma. September 27, 28, 29. Fifteen hours. Fee: \$60.00.

Symposium on Trauma. Franklin Hospital, September 29 and 30. Twelve hours. Fee: \$40.00.

Psychological Aspects of Medical Practice. Wednesday Evenings, October 3 to December 12. Twenty hours. Fee: \$40.00.

Seminars in Medical Technology. Tuesday evenings, October 2 to November 13. Twelve hours. Fee: \$15.00.

Medical Ophthalmology and Ophthalmoscopy. Thursday and Friday, November 1 to 2. Fourteen hours. \$60.00.

Cataract Conference. December 5, 6, 7. Twenty hours.*

New Diagnostic and Therapeutic Techniques. December 12, 13, 14. Fourteen hours.*

Fundamental Principles of Radioactivity and the Diagnostic and Therapeutic Uses of Radioisotopes. Two or three month course limited to one enrollee per month. Tuition: \$250.00 per month.

Contact: Seymour M. Farber, M.D., Head, Postgraduate Instruction, Office of Medical Extension, University of California Medical Center, San Francisco 22. MOntrorse 4-3600, Ext. 665.

UNIVERSITY OF SOUTHERN CALIFORNIA, LOS ANGELES

Intensive Review of Internal Medicine. Especially designed for physicians planning to take their written examination for American Boards in Internal Medicine. Monday through Friday, 8:30 a.m. to 12:30 p.m. September 24 to October 5. Forty hours. Fee: \$65.00.

Home Course in Electrocardiography. Physicians may register at any time and receive all 52 issues. Fifty-two weeks. Fee: \$100.00.

* Fees to be announced.

Pediatrics Clinics for the General Practitioner. Twenty weeks, October 9 through February 12, 1957, 8:30 to 9:30 a.m., Children's Hospital, Santa Anita Foundation Research Building Auditorium. Fee: \$40.00.

Bedside Clinics and Panel Discussions on Therapy in Internal Medicine. Los Angeles County Hospital, Thursdays, October 18 through January 24, 1957, 7:30 to 9:30 p.m. Twenty-four hours. Fee: \$65.00.

Cardiac Resuscitation. Sponsored by the Los Angeles County Heart Association each Wednesday throughout the year, 4 to 6 p.m. Residents admitted without fee. Tuition for all other physicians: \$30.00. (Each session all-inclusive.)

Conferences and Clinics in Endocrinology. All day, each day, November 29, 30 and December 1. Fee: \$65.00.

Conferences and Live Clinics in Diseases of the Liver and Biliary Tract. All day, each day, Friday, Saturday and Sunday, March 22, 23, and 24, 1957. Hotel Statler and Los Angeles County Hospital. Fee: \$65.00.

Contact: Phil R. Manning, M.D., Director, Postgraduate Division, University of Southern California School of Medicine, 2025 Zonal Avenue, Los Angeles 33. CAPItal 5-1511.

COLLEGE OF MEDICAL EVANGELISTS

Anesthesiology. Daily, full-time, six months, beginning each six months. Fee: \$300.

Surgical Anatomy, Dissection, Demonstration and Lectures. Monday and Wednesday, October 1, 1956 to June 5, 1957. 264 hours.

Surgical Anatomy, Dissection, Demonstration and Lectures on Upper and Lower Extremities. Monday and Wednesday, October 1, 1956 to January 9, 1957. 104 hours.

Surgical Anatomy, Dissection, Demonstration and Lectures. Wednesdays, October 3, 1956 to June 5, 1957. Seventy-four hours.

Surgical Anatomy, Demonstration and Lectures of Upper and Lower Extremities. Wednesdays, October 3, 1956 to January 9, 1957. Twenty-six hours.

General Urology. Mondays, October 1, 1956 to December 17, 1956. Twenty-four hours.

General and Surgical Pathology. Tuesday and Thursday, October 2, 1956 to June 4, 1957. 194 hours.

Traumatic and Minor Orthopedic Surgery. Tuesday and Thursday, October 2, 1956 to January 10, 1957. Thirty seven and one-half hours.

Roentgen Diagnosis and Therapy. Wednesday, October 3, 1956 to June 5, 1957. Thirty-three hours.

Surgical Physiology. Thursday, October 4, 1956 to June 6, 1957. Sixty-four hours.

Contact: Chairman, Section on Graduate and Postgraduate Medicine, College of Medical Evangelists, 1720 Brooklyn Ave., Los Angeles 33. ANGelus 9-9131, Ext. 205.

CALIFORNIA MEDICAL ASSOCIATION POSTGRADUATE COURSES

SACRAMENTO VALLEY CIRCUIT, in cooperation with Stanford University School of Medicine:

Dunsmuir—Monday, October 21, 28, November 4, 11.

Chico—Tuesdays, October 22, 29, November 5, 12.

Marysville—Wednesday, October 23, 30, November 6, 13.

Auburn—Thursdays, October 24, 31, November 7, 14.

WEST COAST CIRCUIT in cooperation with University of Southern California School of Medicine:

San Luis Obispo—Mondays, February 18, 25, March 4, 11, 1957.

Santa Maria—Tuesdays, February 19, 26, March 5, 12, 1957.

Santa Barbara—Wednesdays, February 20, 27, March 6, 13, 1957.

POSTGRADUATE INSTITUTES, 1957

SOUTHERN COUNTIES (Riverside, Orange and San Bernardino) in cooperation with University of California, Los Angeles, February 14 to 15, 1957, Disneyland Hotel, Anaheim.

WEST COAST COUNTIES in cooperation with University of Southern California, March 7 to 8, 1957, Golden Bough Theater and La Playa Hotel, Carmel.

SAN JOAQUIN COUNTIES in cooperation with University of California, San Francisco, March 21 to 22, Hotel Californian, Fresno.

NORTH COAST COUNTIES in cooperation with Stanford University, April 11 to 12, 1957, Odd Fellows Hall, Santa Rosa.

SACRAMENTO VALLEY COUNTIES in cooperation with College of Medical Evangelists, June 20 to 21, 1957, Tahoe Tavern, Lake Tahoe.

Contact: Mrs. Margaret H. Griffith, Director, Postgraduate Activities, California Medical Association, 417 So. Hill St., Los Angeles 13.

Medical Dates Bulletin

SEPTEMBER MEETINGS

WASHINGTON STATE MEDICAL ASSOCIATION Annual Meeting, Olympic Hotel, Seattle, September 16-19. **Contact:** Mr. Ralph W. Neill, executive secretary, 1309 Seventh Ave., Seattle, Washington.

LANE MEDICAL LECTURES OF STANFORD UNIVERSITY SCHOOL OF MEDICINE, "Biochemical Experiments in Endocrinology" by Professor Sir Charles Dobbs, Courtauld Professor of Biochemistry at the Middlesex Hospital in London. Evenings, September 17 to 21. **Contact:** Windsor Cutting, M.D., dean, 2398 Sacramento Street, San Francisco 15.

KERN COUNTY HEART ASSOCIATION and KERN COUNTY MEDICAL SOCIETY Annual Heart Symposium, Saddle and Sirloin, Bakersfield, 7:30 p.m., September 18. **Contact:** Eldon E. Geisert, executive secretary, 2603 G Street, Bakersfield.

SAN DIEGO COUNTY GENERAL HOSPITAL TENTH ANNUAL POSTGRADUATE ASSEMBLY, September 19-20. **Contact:** Howard B. Kirtland, Sr., M.D., Chairman Postgraduate Committee, 3505 Fourth Avenue, San Diego 3.

THE AMERICAN ROENTGEN RAY SOCIETY, Statler Hotel, Los Angeles, September 25 to 28. **Contact:** Wilbur Bailey, M.D., chairman, Local Committee, 2009 Wilshire Blvd., Los Angeles.

CALIFORNIA SOCIETY OF INTERNAL MEDICINE ANNUAL MEETING, September 29, La Playa Hotel, Carmel. **Contact:** Mrs. Mildred B. Coleman, Assistant Secretary, Room 515, 350 Post Street, San Francisco 8.

OCTOBER MEETINGS

SAN FRANCISCO HEART ASSOCIATION Annual Postgraduate Symposium, October 3, 4, 5, 1956, St. Francis Hotel, San Francisco. *Contact:* Executive director, 604 Mission St., San Francisco.

AMERICAN CANCER SOCIETY, California Division, Annual Cancer Conference, October 4, 2 to 5 p.m., Fairmont Hotel, San Francisco. *Contact:* Otto Pflueger, M.D., Conference chairman, 384 Post St., San Francisco.

HERRICK MEMORIAL HOSPITAL Medical Staff Second Annual Postgraduate Symposium, 9 a.m.-5 p.m., October 5, Berkeley High School Little Theatre, Allston Way between Grove and Milvia, Berkeley, Calif. *Contact:* Administrator's Office, Herrick Hospital, Berkeley, or telephone: THornwall 5-0130.

AMERICAN COLLEGE OF SURGEONS Clinical Congress, San Francisco, October 8 to 12. *Contact:* American College of Surgeons Office, 40 E. Erie St., Chicago, Ill.

SAN DIEGO COUNTY HEART ASSOCIATION Professional Symposium, U. S. Naval Hospital Auditorium, Balboa Park, San Diego, October 9. *Contact:* O. Martin Avison, executive director, San Diego County Heart Association, 1651 Fourth St., San Diego 1.

LOS ANGELES COUNTY HEART ASSOCIATION 26th Annual Symposium on Heart Disease, Wilshire-Ebell Theatre, 4401 West 8th St., Los Angeles, October 10 and 11. *Contact:* Robert A. Pike, executive director, Los Angeles County Heart Association, 316 South Bonnie Brae, Los Angeles 57 or telephone DUnkirk 8-4127.

CALIFORNIA MEDICAL ASSOCIATION Regional Conference on Physicians and Schools, October 12 and 13, Santa Barbara. *Contact:* R. L. Thomas, assistant executive secretary, 450 Sutter Street, San Francisco.

CALIFORNIA ACADEMY OF GENERAL PRACTICE 8th Annual Scientific Assembly, Hotel Statler, Los Angeles, October 14, 15, 16, 17. *Contact:* William W. Rogers, executive secretary, California Academy of General Practice, 461 Market St., San Francisco.

CALIFORNIA MEDICAL ASSOCIATION second annual Conference on Physicians and Schools, Hacienda, Fresno, October 19 to 20. *Contact:* Robert L. Thomas, assistant executive secretary, California Medical Association, 450 Sutter St., San Francisco.

ALAMEDA-CONTRA COSTA DIABETES ASSOCIATION one-day Symposium on Oral "Insulinoids," October 22, Highland-Alameda County Hospital, Oakland. *Contact:* Institute for Metabolic Research, Highland-Alameda County Hospital, Oakland.

ORTHOPAEDIC HOSPITAL and **RANCHO LOS AMIGOS RESPIRATORY CENTER** jointly sponsor "A Seminar in Comprehensive Patient Care for Selected Neuromuscular Disabilities," October 22 to 26. All-day sessions beginning at 9:00 a.m. and one evening session, October 24. *Contact:* C. L. Lowman, M.D., Orthopaedic Hospital, 2400 S. Flower St., Los Angeles, or John Affeldt, M.D., Rancho Los Amigos, Hondo, Calif.

LETTERMAN ARMY HOSPITAL "Present Concepts in Internal Medicine," 8:00 a.m. to 4:30 p.m., October 29 to November 2. *Contact:* Major Max E. Knickerbocker, MSC, Chief of Education and Training Branch, Letterman Army Hospital, San Francisco.

NOVEMBER MEETINGS

LOS ANGELES UROLOGICAL ASSOCIATION Postgraduate Assembly, Ambassador Hotel, Los Angeles, November 12 to 16. *Contact:* Miss Vesta Fitzsimmons, executive secretary, 6253 Hollywood Blvd., Los Angeles 28.

VETERANS ADMINISTRATION HOSPITAL Conference on Pulmonary Diseases, each Thursday. *Contact:* William R. Haas, M.D., director, Professional Services, Veterans Administration Hospital, Oakland, Calif.

SONOMA COUNTY HEART ASSOCIATION Cardiovascular Symposium presented in cooperation with University of California Medical Extension, and Stanford University School of Medicine, Odd Fellows Hall, Santa Rosa, November 14. *Contact:* Thomas M. Torgerson, M.D., president, Sonoma County Heart Association, P. O. Box 844, Santa Rosa, Calif.

INTERIM SESSION, AMERICAN COLLEGE OF CHEST PHYSICIANS, Benjamin Franklin Hotel, Seattle, Washington, November 25 to 26. *Contact:* Murray Kornfeld, executive director, American College of Chest Physicians, 112 East Chestnut Street, Chicago 11, Illinois.

CALIFORNIA CONFERENCE OF LOCAL HEALTH OFFICERS semi-annual meeting, Sacramento, November 27 to 28. *Contact:* Donald G. Davy, M.D., State Department of Public Health, 2151 Berkeley Way, Berkeley.

1957 MEETINGS

CALIFORNIA RURAL HEALTH COUNCIL Third Annual Conference on Rural Health, January 25 and 26, Hotel Senator, Sacramento. *Contact:* Glenn Gillette, associate director, Public Relations, California Medical Association, 450 Sutter Street, San Francisco.

AMERICAN FEDERATION FOR CLINICAL RESEARCH, Wednesday afternoon and Thursday morning, January 30 to 31, Golden Bough Theater and La Playa Hotel, Carmel.[†]

WESTERN ASSOCIATION OF PHYSICIANS, Wednesday morning and Friday afternoon, January 30 and February 1, Golden Bough Theater, La Playa Hotel, Carmel.[†]

WESTERN SOCIETY FOR CLINICAL RESEARCH, Wednesday afternoon, Thursday and Friday mornings, Golden Bough Theater and La Playa Hotel, Carmel.[†]

SOCIETY OF GRADUATE SURGEONS OF LOS ANGELES COUNTY Surgical Forum, March 4 to 8, Ambassador Hotel, Los Angeles. *Contact:* Wm. F. Roe, M.D., 14431 Hamlin St., Van Nuys, Calif.

REGIONAL MEETING INTERNATIONAL COLLEGE OF SURGEONS, Santa Barbara, California, April 1 to 2. *Contact:* Ross V. Parks, M.D., 1930 Wilshire Blvd., Los Angeles 57.

LETTERMAN ARMY HOSPITAL "Surgery in Acute Trauma," 8 a.m. to 4:30 p.m., April 1 to 3.[‡]

LETTERMAN ARMY HOSPITAL "Oral Surgery," 8 a.m. to 4:30 p.m., April 22 to 26.[‡]

CALIFORNIA MEDICAL ASSOCIATION Annual Meeting, Ambassador Hotel, Los Angeles, April 28 to May 1. *Contact:* John Hunton, executive secretary, 450 Sutter St., San Francisco 8, or Ed Clancy, director of Public Relations, 417 S. Hill St., Los Angeles 13.

[†] For information *contact:* Joseph Ross, M.D., associate dean, UCLA Medical Center, Los Angeles 24.

[‡] *Contact:* Major Max E. Knickerbocker, MSC, Chief of Education and Training Branch, Letterman Army Hospital, San Francisco.



THE PHYSICIAN'S *Bookshelf*

OBSTETRIC PRACTICE—Harold Speert, M.D., Associate in Obstetrics and Gynecology, Columbia University College of Physicians and Surgeons; Assistant Attending Obstetrician and Gynecologist, The Presbyterian Hospital; Alan F. Guttmacher, M.D. Director of the Dept. of Obstetrics and Gynecology, the Mount Sinai Hospital, Clinical Professor of Obstetrics and Gynecology, Columbia University College of Physicians and Surgeons. Landsberger Medical Books, Inc. New York, 1956, 478 pages. \$7.00.

This is intended to be a handbook for the general practitioner, proposed as a "practical, up-to-date guide" for him in the management of pregnancy and its complications. It impresses this reviewer as being a very general survey of current obstetrical practice, and is modern in its approach. The concepts represent the combined thinking of the two authors and the general practices of their respective institutions (Sloane and Mt. Sinai in New York), which are not always in agreement (example—management of diabetes in late pregnancy). The advice and recommendations regarding normal pregnancy and hygiene are sound and in accord with current obstetric practice.

The handbook contains a good index. There is no bibliography, which is proper as this is not intended to be a textbook. Minor editorial objections may be noted, such as the use of the word "principal" for "principle" (p. 233).

This volume may be generally recommended for its intended purpose, and will find usefulness in the hands of the general practitioner who wishes to bring himself up to date in matters obstetrical on a rather broad scale.

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THE MANAGEMENT OF MENSTRUAL DISORDERS

—C. Frederic Fluhmann, B.A., M.D., C.M., Clinical Professor of Obstetrics and Gynecology, Stanford University School of Medicine, W. B. Saunders, Philadelphia, 1956. 350 pages, 121 figures, \$8.50.

This is an excellent book, by an erudite author. It deals with all facets of the complex process that is menstruation, and is not confined merely to the management of menstrual disorders. The latter occupies only one phase of the over-all discussion. The textbook (for that is what this is) begins with an inclusive historical discussion of the concepts of menstruation. Following is a complete picture of the hormones involved in the process and their endocrinologic controls. Menstrual disorders are then thoroughly analyzed, based upon the author's extensive knowledge of and personal work done in this field. Specific methods of management are presented for the various abnormalities. The climacteric and menopause are very completely covered, and the book concludes with a discussion of clinical usage and commercial preparations of sex hormones.

This book can be recommended for the obstetrical specialist, for the internist, and for the endocrinologist. The clinical approach is emphasized throughout. The volume is a worthy successor to the author's previous text on menstrual disorders published in 1939.

OF RESEARCH PEOPLE—George E. Burch, M.D., F.A.C.P., Henderson Professor of Medicine, Tulane University School of Medicine, New Orleans, Grune and Stratton, New York, 1955. 56 pages, \$3.00.

The author has written a careful and thought-provoking essay upon a subject of concern directly to professional workers in the biologic sciences, and to the mass of lay consumers eager to learn the truth, but often forced to listen to prejudiced accounts unfortunately colored. Dr. Burch's carefully balanced and precise sentences demonstrate a type of insight not often found in essays of this character. There is a message for the investigator himself, which outlines his potential credulities and pitfalls. Although being a professional research worker is a full-time job, most investigators are pressured into spending their potentially productive time in dilettante activities, such as dispatching, speech-making, promotional activities and attending endless and meaningless committees. For the research assistant and research fellow, there is sound advice, especially in regard to the tragedy of "taking one's self too seriously." The research technician and other personnel, who often clutter the landscape of the research environment, may learn how to better evaluate their duties and conduct themselves in accordance. The "Research Director" comes in for his share of appreciation, terse and to the point. For the University Administrative Officer, the essay is a must. All in all it is sound and delightful reading. Unfortunately the book is hampered by illustrations appropriate for a Sunday comic strip but certainly unfit for so sapient a contribution.

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CASIMIR FUNK—Pioneer in Vitamins and Hormones—Benjamin Harow, Dodd, Mead & Company, New York, N. Y., 1955. 209 pages, \$4.00.

The author has written an interesting biography of a restless person, who despite this attribute (usually a handicap in a scientist) was able to make significant research contributions. That Casimir Funk is a genius of unusual quality no one can deny, especially in the light of his preparatory training with its paucity of supervision, and the hazards of constantly changing his areas of work, intellectual and geographic. Though he often worked under circumstances which were inadequate and discouraging, he still managed to make some important basic contributions to biologic science in the fields of experimental nutrition, the chemistry of hormones, and especially in the commercial production of medicinal agents. No one could have been successful in these latter circumstances without basic knowledge of the principles of chemistry and manufacturing techniques, a singleness of purpose, and an outstanding devotion to an ideal. It is a pity that a man of such unusual talent should have had to indulge so many interests, many not to his complete satisfaction, and always under sub-optimal circumstances, in so many different laboratories.

The author has labored some of the sections by unnecessary repetition and summary, and by the use of descriptive language ostensibly aimed at lay readers. That Casimir Funk was able to make any contributions working under the conditions prevailing in so many different countries is truly a remarkable achievement.

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BORDERLANDS OF THE NORMAL AND EARLY PATHOLOGIC IN SKELETAL ROENTGENOLOGY—Tenth Edition—Prof. Alban Kohler—Completely Revised with Reference to Illustrations and to Text by Dozent Dr. E. A. Zimmer, Bern/Fribourg, English Translation Arranged and Edited by James T. Case, M.D., D.M.R.E. (Cambridge) Professor Emeritus of Radiology, Northwestern University Medical School, Chicago. Grune and Stratton, Inc., New York, 1956. 723 pages, \$24.50.

Medical records are sometimes divided into three broad types: Records of conditions which are frankly abnormal; records of conditions which are apparently quite normal; and, finally, records of conditions of dubious normalcy. The latter constitute a source of frequent difficulty in teaching, in clinical practice and in research. The author of this book recognized this well-known fact many years ago and prepared an excellent treatise in German dealing with borderlines of the normal in skeletal roentgenology.

English editions appeared in 1928 and in 1935, both being sold out in a few years' time. The present edition is moderately enlarged since that of two decades ago, and remains replete with useful information on variations and anomalies of the skeletal system which are a common source of confusion and erroneous diagnosis in everyday practice. Many radiologists keep this volume beside a well thumbed copy of Gray's Anatomy as two of the most frequently consulted works in their library.

After an excellent section on fundamental considerations, there are chapters devoted to conditions of the upper extremity, the shoulder girdle, the thorax, the skull, the spinal column and pelvis, and finally the lower extremity. There is an adequate number of illustrations and diagrams. The references are satisfactory and the index reasonably so. The reviewer believes that this volume will continue to be of considerable use in clinical roentgenology for many years to come.

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UROLOGY—B. G. Clarke, M.S., M.D., F.A.C.S., Associate Professor of Urology, Tufts University School of Medicine; and Louis R. M. Del Guercio, M.D., Assistant Resident Surgeon, St. Vincent's Hospital, New York. The Blackiston Division, McGraw-Hill Book Company, Inc., New York, 1956. 245 pages, \$6.50.

This little volume is another short compendium on urology, similar to others that have appeared in recent years, intended primarily for the student or physician who does not have available the specialty literature or who desires only very brief but accurate basic information. The book does contain very short descriptions of most of the modern urological diagnostic and therapeutic procedures, but with entirely too little detail to satisfy any real thirst for information about the techniques or problems involved.

Though the preface implies that the published book is based on the lectures given (presumably by the senior author) at the Tufts University School of Medicine, it is really not sufficiently complete for a textbook. The publishers suggest that it is to be read during the course and may be used for board reviews. For this latter purpose it is really little more than a very complete outline or index of the subjects to be studied.

The book has, however, some valuable features. It is quite up-to-date and has very brief descriptions of practically all of the more recent developments. It is accurate and scientific and one will find little to criticize in any of the statements.

It is made easy to read by the generous use of line drawings, x-rays, and photomicrographs. These are all well reproduced and usually accompanied by a concise history of the problem. This is a feature that might profitably be more generally adopted. Finally, the bibliography appended to each chapter is unusually good and to a certain extent makes up for the brevity of the text, for the reader who wishes to pursue any subject in greater detail will find there the references necessary for more exhaustive study.

The chief objection to the book has already been stated. To the urologist, at least, that it is too brief and that this brevity tends to oversimplify the subject and fails to recognize the extreme significance of the details so vitally important in the management of urological patients.

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RETROLENTAL FIBROPLASIA—Role of Oxygen—Report of the Sixteenth M & R Pediatric Research Conference. Issued by M & R Laboratories, Columbus 16, Ohio, 1955. 62 pages.

This brochure of a symposium held under the auspices of the Department of Pediatrics, University of New York College of Medicine is a review of the various facets of retrolental fibroplasia.

This brochure summarizes the laboratory and clinical investigations prior to January 1955 and is of interest to both pediatricians and ophthalmologists.

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SALIVARY GLAND TUMORS—Donald E. Ross, M.D., F.A.C.S., F.I.C.S., F.R.C.S. (Eng.), F.R.C.S. (Edin.), Diplomate, The American Board of Surgery, Chief Surgeon, Ross-Loos Medical Group, Los Angeles. Charles C. Thomas, publisher, Springfield, Illinois, 1955. 86 pages, \$7.50.

This book has the advantage of being concentrated, terse and well written. Parotid tumors and neoplasms of the salivary gland are reviewed, described and the pathology is discussed. There are some excellent cuts of microscopic slides of tumors, both low and high power. Surgical anatomy is carefully reviewed with salient structures involved in these problems brought out with excellent cuts. Criteria of surgery and the proper procedures are described and discussed.

Dr. Ross brings out the pertinent fact that tumors of the parotid are very apt to invade the capsule and therefore removal of the tumor with the capsule alone is rarely sufficient. Operation to correct paralysis of the fascial nerve is touched upon with illustrations.

This book is an excellent reference work in which the salient factors of these problems can be quickly reviewed.

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COLLAGEN DISEASES—Including Systemic Lupus Erythematosus, Polyarteritis, Dermatomyositis, Systemic Scleroderma, Thrombotic Thrombocytopenic Purpura—John H. Talbott, M.D., Professor of Medicine, University of Buffalo School of Medicine, and R. Moler Ferrandis, M.D., Training Fellow in Arthritis of the Western New York Chapter of the Arthritis and Rheumatism Foundation, Grune and Stratton, Inc., New York, 1956. 232 pages, \$6.50.

This small monograph presents, in well written form, a surprising amount of information concerning the disorders named in its subtitle. Each of the five chapters contains divisions on the history, incidence, and relation of the disturbance to other collagen disorders; etiology and pathogenesis, pathology, clinical and laboratory findings, diagnosis, course and treatment are described. Illustrations and index are satisfactory and the bibliography is extensive. In short, the work provides an excellent review of the so-called collagen diseases and may be recommended without reservation.